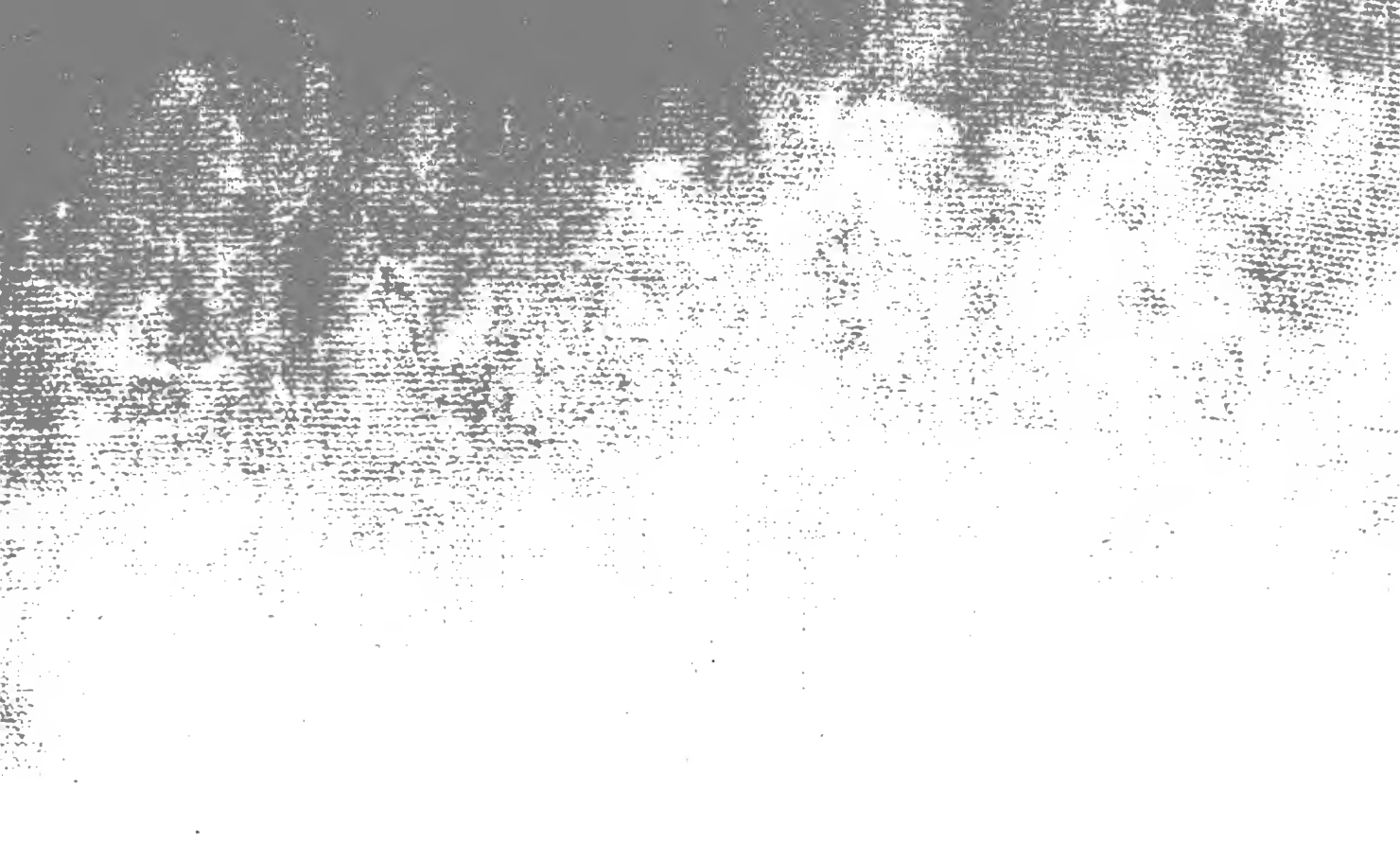

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ORIGIN OF EXCHANGE—SPENCER'S THEORY

[In his Principles of Sociology, Herbert Spencer suggests that barter, and exchange for money, may have grown out of the exchange of presents; and he gives some evidence in support of this view. In discussing ceremonial institutions he shows that the custom of giving presents developed into the various forms of tribute, taxation, sacrifice, and ecclesiastical offerings. He then says (Vol. II, pp. 99–100; reproduced by permission of the publishers, D. Appleton and Co., New York; three volumes, 1895 and 1896):]

Something must be added concerning presents passing between those who do not stand in acknowledged relations of superior and inferior.

Consideration of these carries us back to the primitive form of present-making, as it occurs between members of alien societies; and on looking at some of the facts, there is suggested a question of much interest: Whether from the propitiatory gift made under these circumstances there does not originate another important kind of social action? Barter is not, as we are apt to suppose, universally understood.[1] Cook, speaking of his failure to make any exchange of articles with the Australians, says, "They had, indeed, no idea of traffic." And other statements suggest that when exchange begins, the thought of equivalence between the things given and received scarcely arises. Of the Ostyaks, who supplied them "with plenty of fish and wildfowl," Bell remarks,

[1] [Compare with A. Smith's idea of a "propensity in human nature to truck, barter, and exchange one thing for another." Wealth of Nations, book i, ch. 2.—Ed.]

"Give them only a little tobacco and a dram of brandy, and they ask no more, not knowing the use of money." Remembering that at first no means of measuring values exists, and that the conception of equality of value has to grow by use, it seems not impossible that mutual propitiation by gifts was the act from which barter arose: the expectation that the present received would be of like worth with that given being gradually established, and the exchanged articles simultaneously losing the character of presents. One may, indeed, see the connection between the two in the familiar cases of gifts made by European travelers to native chiefs; as where Mungo Park writes: "Presented Mansa Kussan [the chief man of Julifunda] with some amber, coral, and scarlet, with which he appeared to be perfectly satisfied, and sent a bullock in return." Such transactions show us both the original meaning of the initial present as propitiatory, and the idea that the responsive present should have an approximately-like value: implying informal barter. Nay more. Certain usages of the North American Indians suggest that even a circulating medium may originate from propitiatory presents. Catlin writes:

> Wampum has been invariably manufactured, and highly valued as a circulating medium (instead of coins, of which the Indians have no knowledge); so many strings, or so many hands' breadth, being the fixed value of a horse, a gun, a robe, etc. In treaties the wampum belt has been passed as the pledge of friendship, and from time immemorial sent to hostile tribes, as the messenger of peace; or paid by so many fathoms' length, as tribute to conquering enemies.

[In the part on "Industrial Institutions," originally published ten years later than the foregoing, Spencer says, Vol. III, pp. 387–391]:

Among incidents of human intercourse few seem simpler than barter; and the underlying conception is one which even the stupidest among savages are supposed to understand. It is not so, however. In . . . treating of Ceremonial Institutions, reasons were given for suspecting that barter arose from the giving of presents and the receipt of presents in re-

turn. Beyond the evidence there assigned there is sufficient further evidence to justify this conclusion. In the narrative of an early voyager, whose name I do not remember, occurs the statement that barter was not understood by the Australian savages: a statement which I recollect thinking scarcely credible. Verifying testimonies have, however, since come to hand. Concerning the New Guinea people we read:

> One of the most curious features noticed by Dr. Miklucho Maclay was the apparent absence of trade or barter among the people of Astrolabe Bay. They exchange presents, however, when different tribes visit each other, somewhat as among the New Zealanders, each party giving the other what they have to spare; but no one article seems ever to be exchanged for another of supposed equivalent value.

Confirmation is yielded by the account D'Albertis gives of certain natives from the interior of New Guinea. Concerning one who came on board he says:

> I asked him for the belt he wore round his waist, in exchange for some glass beads, but he did not seem to understand the proposal, which I had to make in pantomime instead of vocal language. He spoke a few words with his people, and then he took off his belt, and received in exchange the beads and the looking-glass, in which he seemed afraid to look at himself. When, however, he was on the point of returning to shore, he wanted to have his belt back, and it was impossible to make him understand that he had sold it, and that if he did not wish to part with it he must return the articles he had received in exchange.

Another instance, somewhat different in its aspect, comes to us from Samoa. Turner says that at a burial "every one brought a present, and the day after the funeral these presents were all so distributed again as that every one went away with something in return for what he brought." Of a remote people, the tribes of Nootka Sound, we read as follows in Bancroft:

> They manifest much shrewdness in their exchanges; even their system of presents is a species of trade, the full value of each gift being confidently expected in a return present on the next festive occasion.

A different phase of the process occurs in Africa. Describing the Bihénos, Capello and Ivens tell us:

> Following the vicious system in operation throughout Africa of not selling anything to the European, but making him a present of it, they extort from him in turn all his goods and effects, bit by bit, until the unhappy man finds himself under the necessity of refusing all presents.

Thus the very idea of exchange, without which there cannot begin commercial intercourse and industrial organization, has itself to grow out of certain ceremonial actions originated by the desire to propitiate.

In the absence of measures of quantity and value, the idea of equivalence must remain vague. Only where the things offered in barter are extremely unlike in their amounts or qualities or characters, does lack of equivalence become manifest. How rude trading transactions are at first, is well shown by the following extract concerning an Indian people, the Chalikatas. Dalton says:

> It was very interesting to watch the barter that took place there between these suspicious, excitable savages and the cool, wily traders of the plains. The former took salt chiefly in exchange for the commodities they brought down, and they would not submit to its being measured or weighed to them by any known process. Seated in front of the trader's stall, they cautiously take from a well-guarded basket one of the articles they wish to exchange. Of this they still retain a hold with their toe or their knee as they plunge two dirty paws into the bright white salt. They make an attempt to transfer all they can grasp to their own basket, but the trader, with a sweep of his hand, knocks off half the quantity, and then there is a fiery altercation, which is generally terminated by a concession on the part of the trader of a few additional pinches.

In the absence of a medium of exchange other inconveniences arise. One is the difficulty of bringing into relation those whose needs are reciprocal. The experiences of Dr. Barth in Africa clearly exemplify this evil:

> A small farmer who brings his corn to the Monday market . . . in Kúkawa, will on no account take his payment in shells, and will

rarely accept of a dollar: the person, therefore, who wishes to buy corn, if he has only dollars, must first exchange a dollar for shells, or rather buy shells; then with the shells he must buy a "kulgu," or shirt; and after a good deal of bartering he may thus succeed in buying the corn. . . . The fatigue to be undergone in the market is such that I have very often seen my servants return in a state of the utmost exhaustion.

In this place, better than elsewhere, may be named an obstacle to a developed system of exchange which results from the misapprehensions of the uninitiated. Of the Chitralis, Captain Younghusband tells us that they supposed rupees to be ornaments only, and could not understand receiving them in payment for work. Pim and Seemann say of the Bayano Indians that:

They do not seem to understand exactly the value of money, and think that the true drift of making a bargain consists in offering a sum different to that demanded. I happened to be in a shop when four of them came in to buy a comb, for which half a crown [two and a half shillings] was asked, but the Indians said that unless the shopkeeper would take three shillings they could not think of having it.

Here "the higgling of the market" is exhibited under its general form—the expression of a difference between the estimates of buyer and seller; and, showing that lack of discrimination characterizing low intelligences, there is a confusion between the two ways of asserting the difference.

ORIGIN OF MARKETS AND PRICES

[Sir Henry Maine in one of his lectures, cited below, shows that the modern ideas of competition-rent for land and of the sale of land by individuals were not known in primitive communities. Rents were determined by custom. Rack-rent, an Irish term sometimes used to indicate an extreme competition-rent, was really the rent exacted from a person of a strange tribe in contrast with "a fair rent, from one of the tribe." "In a primitive society the person who submits to extreme terms from one group is pretty sure to be an outcast thrown on the world by the breaking up and dispersion of some other group, and the effect of giving him land on these terms is not to bring him under the description of a tenant as understood by the economists, but to reduce him to a condition resembling predial servitude."

The author then broadens his inquiry to that of the origin of competition-price, or market-price in general; competition-rent of land being, as he shows, but one case of market-price. We quote below most of pages 189–201, in the chapter on "The early history of price and rent" from Village-Communities in the East and West, six lectures delivered at Oxford. First published 1871; quotations from the third edition, 1876, by courtesy of the publisher, John Murray, Albermarle Street, London.]

It would almost certainly be labor wasted to search among the records of ancient law for any trace of the ideas which we associate with competition-rents. But if land in primitive times was very rarely sold or (in our sense) rented, and if movable property was very rarely hired for money, it is at least probable that from a very early date movables were purchased. It does not appear to me quite a hopeless undertaking to trace the gradual development of the notions connected with price; and here, if at all, we shall be able to follow the early history of bargaining or competition. Nor, if we can discover any primitive ideas on the point, need we hesitate to transfer them from the sale of movables to the

competition of land. The Roman lawyers remark of the two contracts called Sale for Price, and Hiring for Consideration, that they are substantially the same, and that the rules which govern one may be applied to the other. The observation seems to me not only true, but one which it is important to keep in mind. You cannot indeed without forcing language speak of the contract of sale in terms of the contract of letting and hiring; but the converse is easy, and there is no incorrectness in speaking of the letting and hiring of land as a sale for a period of time, with the price spread over that period. I must confess I could wish that in some famous books this simple truth had been kept in view. It has several times occurred to me, in reading treatises on political economy, that if the writer had always recollected that a competition-rent is after all nothing but price payable by instalments, much unnecessarily mysterious language might have been spared and some (to say the least) doubtful theories as to the origin of rent might have been avoided. The value of this impression anybody can verify for himself.

What, in a primitive society, is the measure of price? It can only be called custom. Although in the East influences destructive of the primitive notion are actively at work, yet in the more retired villages the artificer who plies an ancient trade still sells his wares for the customary prices, and would always change their quality rather than their price—a preference, I must remark, which has now and then exposed the natives of India to imputations of fraud not wholly deserved. And in the West, even in our own country, there are traces of the same strong feeling that price should be determined by custom in the long series of royal, parliamentary, and municipal attempts to fix prices by tariff. Such attempts are justly condemned as false political economy, but it is sometimes forgotten that false political economy may be very instructive history. . . .

What, then, is the origin of the rule that a man may ask—or, if you choose so to put it, that he does ask—the

highest available price for the wares which he has to sell? I think that it is in the beginning a rule of the market, and that it has come to prevail in proportion to the spread of ideas originating in the market. This indeed would be a proposition of little value, if I did not go farther. You are well aware that the fundamental proposition of political economy is often put as the rule of buying in the cheapest market and selling in the dearest. But since the primitive period, the character of markets has changed almost as much as that of society itself. In order to understand what a market originally was, you must try to picture to yourselves a territory occupied by village-communities, self-acting and as yet autonomous, each cultivating its arable land in the middle of its waste, and each, I fear I must add, at perpetual war with its neighbor. But at several points, points probably where the domains of two or three villages converged, there appear to have been spaces of what we should now call neutral ground. These were the markets. They were probably the only places at which the members of the different primitive groups met for any purpose except warfare, and the persons who came to them were doubtless at first persons specially empowered to exchange the produce and manufactures of one little village-community for those of another. Sir John Lubbock in his recent volume on the "Origin of Civilization," has some interesting remarks on the traces which remain of the very ancient association between markets and neutrality (page 205); nor—though I have not now an opportunity of following up the train of thought—can I help observing that there is a historical connection of the utmost importance to the moderns between the two, since the Jus Gentium of the Roman Prætor, which was in part originally a market law, is the undoubted parent of our International Law. But, besides the notion of neutrality, another idea was anciently associated with markets. This was the idea of sharp practice and hard bargaining. The three ideas seem all blended in the attributes of the god Hermes

or Mercury—at once the god of boundaries, the prince of messengers or ambassadors, and the patron of trade, of cheating, and of thieves.

The market was then the space of neutral ground in which, under the ancient constitution of society, the members of the different autonomous proprietary groups met in safety and bought and sold unshackled by customary rule. Here, it seems to me, the notion of a man's right to get the best price for his wares took its rise, and hence it spread over the world. Market law, I should here observe, has had a great fortune in legal history. The Jus Gentium of the Romans, though doubtless intended in part to adjust the relations of Roman citizens to a subject population, grew also in part out of commercial exigencies, and the Roman Jus Gentium was gradually sublimated into a moral theory which, among theories not laying claim to a religious sanction, had no rival in the world till the ethical doctrines of Bentham made their appearance. If, however, I could venture to detain you with a discussion on technical law, I could easily prove that market law has long exercised and still exercises a dissolving and transforming influence over the very class of rules which are profoundly modifying the more rigid and archaic branches of jurisprudence. The law of personal or movable property tends to absorb the law of land or of immovable property, but the law of movable tends steadily to assimilate itself to the law of the market. The wish to establish as law that which is commercially expedient is plainly visible in the recent decisions of English courts of justice; a whole group of legal maxims having their origin in the law of the market (of which the rule of *caveat emptor* is the most significant) are growing at the expense of all others which compete with them. . . .

It seems to me that the half-conscious repulsions which men feel to doctrines which they do not deny might often be examined with more profit than is usually supposed. They will sometimes be found to be the reflection of an older law of

ideas. Much of the moral opinion is no doubt in advance of law, for it is the fruit of religious or philosophical theories having a different origin from the law and not yet incorporated with it. But a good deal of it seems to me to preserve rules of conduct which, though expelled from law, linger in sentiment or practice. The repeal of the usury laws has made it lawful to take any rate of interest for money, yet the taking of usurious interest is not thought to be respectable, and our courts of equity have evidently great difficulty in bringing themselves to a complete recognition of the new principle. Bearing this example in mind, you may not think it an idle question if I ask: What is the real origin of the feeling that it is not creditable to drive a hard bargain with a near relative or a friend? It can hardly be said that there is any rule of morality to forbid it. The feeling seems to me to bear the traces of the old notion that men united in natural groups do not deal with one another on principles of trade. The only natural group in which men are now joined is the family; and the only bond of union resembling that of the family is that which men create for themselves by friendship. . . .

All indications seem to me, therefore, to point to the same conclusion. Men united in those groups out of which modern society has grown do not trade together on what I may call, for shortness, commercial principles. The general proposition which is the basis of political economy made its first approach to truth under the only circumstances which admitted of men meeting at arm's length, not as members of the same group, but as strangers. Gradually the assumption of the right to get the best price has penetrated into the interior of these groups, but it is never completely received so long as the bond of connection between man and man is assumed to be that of family or clan-connection. The rule only triumphs when the primitive community is in ruins. What are the causes which have generalized a rule of the market until it has been supposed to express an original and fundamental ten-

dency of human nature, it is impossible to state fully, so multifarious have they been. Everything which has helped to convert society into a collection of individuals from being an assemblage of families, has helped to add to the truth of the assertion made of human nature by the political economists. One cause may be assigned, after observation of the East, in the substitution of caravan or carrying trade for the frequentation of markets. When the first system grows up, the merchant, often to some extent invested with the privileges of an ambassador, carries his goods from the place of production, stores them in local *entrepots,* and sells them on the principles of the market. . . . A man who will pay the price of the day for corn collected from all parts of India, or for cotton-cloth from England, will complain (so I am told) if he is asked an unaccustomed price for a shoe.

If the notion of getting the best price for movable property has only crept to reception by insensible steps, it is all but certain that the idea of taking the highest obtainable rent for land is relatively of very modern origin. The rent of land corresponds to the price of goods, but doubtless was slower in conforming to economical law, since the impression of a brotherhood in the ownership of land still survived when goods had long since become the subject of individual property. So strong is the presumption against the existence of competition-rents in a country peopled by village-communities, that it would require the very clearest evidence to convince me that they were anywhere found under native conditions of society, but the evidence (as I told you) is remarkably unconvincing. . . .

The right to take the highest obtainable rent for land is, as a matter of fact and as a matter of morality, a right derived from a rule of the market. Both the explanation and the justification of the exercise of the right in England and Scotland is that in these countries there really is a market for land. Yet it is notorious that, in England at all events, land is not universally rack-rented. But where is it that the

theoretical right is not exercised? It is substantially true that, where the manorial groups substituted for the old village groups survive, there are no rack-rents. What is sometimes called the feudal feeling has much in common with the old feeling of brotherhood which forbade hard bargains, though like much else it has passed from the collective community to the modern representative of its autocratic chieftain. Even in England the archaic rules I have been describing have not yet quite lost their authority. . . .

It is a very remarkable fact that the earliest English emigrants to North America—who, you know, belonged principally to the class of yeomanry—organized themselves at first in village-communities for purposes of cultivation. When a town was organized, the process was that the "General Court granted a tract of land to a company of persons. The land was first held by the company as property in common." (Palfrey, "History of New England," vol. II, p. 13.) An American commentator on this passage adds: "The company of proprietors proceeded to divide the land by assigning first house-lots (in Marlborough from fifteen to twenty acres), then tracts of meadow land, and in some cases mineral land, i.e., where bog-iron ore was found. Pasture and woodland remained in common as the property of the company, but a law of the General Court in 1660 provided that 'hereafter no cottage or dwelling-house be admitted to the privilege of commonage for wood, timber, or herbage but such as are already in being, or shall be erected with the consent of the town.' From that time the commoners appear as a kind of aristocracy, and the commons were gradually divided up." This is not only a tolerably exact account of the ancient European and existing village-community, but it is also a history of its natural development, where the causes which turn it into a manorial group are absent, and of its ultimate dissolution.

ODD PRICES AND BARGAINS IN RETAIL TRADE

[The author of the paper bearing this title, in making a statistical study of a semiannual bargain-sale price-list, finds that about 32 per cent. of all prices quoted end in the figure 9; 16 per cent. in the figure 5; 13 per cent. in the figure 3; and 12 per cent. in the figure 8. Studying the figures in detail he suggests various interesting reasons for the preference shown in the price-list. We quote from the last third of the paper, by Robert C. Brooks, professor of Political Science in Swarthmore College; in University Studies, published by the University of Cincinnati, March-April, 1908, pp. 20–28, here abbreviated and edited with the author's approval.]

Are odd prices cheap prices? The whole purpose of odd prices, as we have seen, is to suggest by means of carefully selected figures the idea of price reduction. How far may this suggestion be depended upon? In attempting to answer this question we should note first that odd prices are only part of a general plan to the same end. Readers of advertisements are familiar with the fact that in addition to quoting goods at 19, 49, 98 cents, and so on, the advertiser frequently seeks to convey the impression that reductions much greater than one or two cents have been made. The prospective buyer may take all such statements *cum grano salis,* and depend chiefly on the small but apparently visible reductions indicated by the odd prices themselves. Nevertheless the bargain hunter is abroad in the land, and even the most astounding of the announcements regarding "sacrifices," "slaughtered prices," and so on must find some credence. . . . [Some examples.]

Now there is nothing intrinsically improbable in any of the above statements taken separately. There are bargains and bargains as every experienced shopper knows. Many contingencies constantly occur in retail trade which enable or

compel merchants to offer goods at prices below the ordinary rates. Demand fluctuates widely; in almost every line of business there are dull seasons and dull days during which retailers think it wise to offer inducements in order to stimulate a sluggish buying public. Every merchant, large and small, has to dispose from time to time of "stickers"—old stocks of slow moving goods. Particularly when changes of fashion occur or improvements are coming in rapidly is this bound to be the case. Manufacturers and jobbers sometimes misjudge the market and find themselves with large stocks on hand near the end of a season, or they may lose their heads even when there is no danger and let go at a reduction. In such cases retailers, particularly large retailers, are in a position to secure the goods on terms which enable them in their turn to sell at what are really very low rates. The purchase of bankrupt stocks, or of the stocks of concerns that are going out of business, also offers opportunities. Other contingencies are constantly occurring among the hundreds of manufacturers, jobbers, and retailers. Of course in many such cases the fact that goods are offered at reduced prices may indicate that they are either damaged, out of style, or undesirable in color or in some other way. This leaves open the question as to whether the reduced prices are really low, qualities being taken into consideration. There can be no doubt, however, that opportunities are often offered to purchasers to buy at what are really very favorable rates. For example, what has become a "sticker" to a merchant may satisfy a very fresh and keen desire on the part of a customer. Reductions made because of a change of fashion may mean a great deal to purchasers who care little for style. Even standard goods, as for instance silks a few years ago, may be turned out in large quantities just before a sudden falling off in demand. At such times consumers may justly consider themselves fortunate in having an opportunity to stock up while prices are low. Then, too, it sometimes happens that a certain line is sold at a reduction to

serve the purpose of the bargain counter, that is, to bring a crowd which will be tempted to buy other things. The particular goods that, so to speak, serve as bait may be very attractive considered separately. Finally it should be said that successful merchants are neither fools, nor do they take their customers to be fools. They realize that understatement is more effective in the long run than overstatement, that it does not pay to play up small opportunities as great features, and that it does pay, most emphatically, to mean bargain when you say bargain. To be sure there are "lambs" among retail purchasers just as there are in Wall Street, with this difference, however, that in retail trade the lambs do not go "broke." In the very nature of the case they must continue buying. And unintelligent as many buyers doubtless are, they do not always return to the places where they have been shorn.

In a word, there certainly are bargains—for those who are able to perceive them—and not infrequently at that. On the other hand, there is a considerable element of deception in many offerings under this seductive heading. Even allowing fully for the various contingencies noted in the foregoing paragraph it still remains highly improbable that all the vast array of startling reductions advertised every day can be *bona fide*. Sometimes they measure the credulity of customers or of certain classes of customers rather than the operations of a "horizontal discount knife." The writer has been told of cases where goods have been deliberately cut into "remnants" or handkerchiefs "mussed" by being drawn through the hands. Thrown out carelessly on the counter such "attractions" prove irresistible to a certain class of buyers who snatch them up without examination as to quality or price, convinced from the apparent condition of the goods that they have hit upon famous bargains. Experienced shoppers can usually tell of at least a few cases that have come to their notice where certain goods have been boosted fifty cents or a dollar in price at special sales, the dealer doubt-

less presuming on the ignorance of customers and the blasts of his advertisement writer to carry off the articles. Success in comparatively few instances of this sort would make up many actual small reductions of a cent or two to the odd price basis. In fairness it must be said, however, that the best merchants regard such practices as bad morally, or at least injudicious. Where the thing is done surreptitiously occasional discoveries are certain to occur, and the store is bound to suffer losses out of all proportion to the gains derived from the foolish trick. Sometimes, however, the practice is openly employed, as in the case of bargain sales held on dull days or in the mornings. In such cases every one is given to understand that prices will be lower at the time and higher later, and no moral blame at least can be attached to the merchant for so acting. Nevertheless this knowledge does not soothe the ruffled temper of the purchaser who is forced to pay twenty-five cents for something his neighbor may have gotten for nineteen cents. Realizing this fact merchants generally follow the "one price policy" of holding goods at a given figure for some time. If reduction then becomes necessary goods are held at the lower figure until closed out, or further reductions without intervening advances are made until this end is attained.

There is plenty of available evidence that some "great reductions" heralded in advertisements are really great exaggerations of very small reductions. Instances of this sort are given by the *Dry Goods Economist* of March 19, 1904. . . . Frequently one notices the beginning of better things or at least of greater caution in the avoidance of direct affirmations that former prices were so and so, and the substitution therefore of statements to the effect that "values" or "qualities" would justify higher prices than the ones asked. Sometimes reformation takes the dubious path of sweeping announcements that competitors can not meet the prices fixed by the advertiser. Investigation of such statements requires more time than most purchasers can afford to give, but in all

retail markets of any considerable size they are simply not warranted by facts. Every wide-awake merchant constantly has opportunities along certain lines—so much may be admitted—but no merchant has an absolute monopoly of such opportunities. The unceasing vigilance with which retail traders watch each other is scarcely known to the general public. In every large establishment there is a "Comparison Department" specially charged with this function. "Spotters" are constantly being sent out by the head of this department to observe the doings of competitors and daily reports of their findings are made. If a rival store offers a great bargain, samples are bought, carefully examined, even torn to pieces if necessary to ascertain qualities, and a corresponding or greater reduction made if thought advisable. Under the circumstances, the advertisements of merchants who claim everything all the time are more ludicrous than anything else.

Standards of retail business. While there is doubtless much to condemn in some of the practices cited in the foregoing pages it would be highly unjust to charge all retailers with deliberate and habitual misrepresentation. Many of the greatest successes, one can say practically all the permanent successes, of the mercantile world, have been made by firms which have conscientiously avoided deception. It would be easy to mention cases of this sort in New York, Chicago, Philadelphia, and other of our large cities, but they are familiar enough without mention. Even where retail practice is not so scrupulous, deliberate and habitual misrepresentation can not always be charged. The truth is that many merchants of this as well as of a higher type use such terms as qualities, values, prices, etc., very loosely, and more in accordance with the customs of the market in which they happen to be doing business than with the definitions of economics or the canons of ethics. Not infrequently the community, or a certain class of buyers in the community, is to blame in large part for the abuses which spring up in retailing. On this point the writer

finds it impossible to agree entirely with a very clever authority on merchandising who maintains that "the retailer is the king of business. It 's not the consumer—arguments to the contrary notwithstanding. It 's upon the education given the consumer by the dealer that the formation of taste depends." Granting that the influence of the retailer is great, it still remains true that his patrons are, presumably at least, fairly intelligent grown-up persons who exercise ordinary prudence in business matters. The retailer is more active, of course, in designing and applying various plans to attract trade; but precisely the same motive as his own, namely, self-interest rightly or wrongly conceived, dictates the action of his customers in giving or withholding patronage. The latter may be careless, ignorant, or under the spell of that delusive cupidity which is always seeking something for nothing, and these conditions may permit or encourage merchants to employ tricky devices. Even so, purchasers can hardly be exonerated from all blame for the resulting demoralized condition of the retail market. In illustration of the foregoing may be cited numerous cases of towns and cities where severely competitive "selling campaigns" have been carried so far that in the end it becomes almost impossible to dispose of anything except with the aid of such devices as trading stamps or as bargains on one pretext or another—where the people "have been so deafened with the siren song of 'bargains,' " as one trade journal puts it, "that they don't know one when they see it." Manifestly such conditions reflect not only the character of the mercantile element, but also the character of the public as retail buyers—a conclusion which need not be blinked because phenomena of this sort are so exceedingly common. The following advice given to a merchant who complained of trade conditions demoralized in this manner is particularly noteworthy because of its frank implication that retail trade as at present conducted is not simply a price competition:

. . . The wise merchant, when he sees a wave of price-cutting sweeping over his community, will dodge the competition as far as he is able. He will do all he can to impress his community that there is something more than price to be considered. He will not do this by direct statements to that effect; that goes without saying. But he will try to get a reputation for his store on something *besides* price, always being smart enough to create a reputation for selling as low as his competitors. He will sell staples extremely low, but on novelties he 'll make enough profit to offset the loss. And he will get the people coming to him for these novelties. He 'll talk style and fashion in his ads, and over the counter; he 'll show the new and fashionable things and he will have them before the other fellows get them in stock.[1]

Further advice along the same lines is given, but enough has been quoted to make clear the conditions which compel merchants either to cut prices extensively or to resort to other means of meeting a cut price competition.

A retail buying policy. With such complex and often deceptive conditions existing in retail trade it is a matter of considerable difficulty to formulate a policy for buyers to pursue. Certain general rules seem fairly clear, however. It is an old maxim that nothing is a bargain which is not needed. Unfortunately purchasers often forget this; with many people buying is a passion rather than the cold calculation of the economic man. One qualification of the maxim quoted above is of some importance, however. There are many regularly recurring wants which the ordinary purchaser satisfies as they reach their maximum intensity, that is, usually, in the very thick of the season. As a consequence he pays the highest retail prices for his goods. A careful study of the cycle of special sales of various sorts (for they run in a fairly regular cycle through the year) will often enable him to effect considerable savings, by taking advantage of low prices during dull seasons. Another general rule for the bargain seeker is that he should consider the cost in effort as well as the money-cost of the things he buys. In spite of all the devices to facilitate the examination of goods and their de-

[1] *Dry Goods Economist*, March 18, 1906, p. 15.

livery, shopping remains an arduous occupation. Notoriously it is often carried too far. Mrs. John Lane tells the story in a recent number of an English review of a "woman of massive intellect" who saved seven pence by going to a distant suburb for Brussels sprouts. As a consequence she became so exhausted that it took several days and the services of a fashionable physician to restore her. Perhaps it is because of the frequent neglect of two such obvious principles as the foregoing—namely, not to buy what you don't need and not to go to too much trouble in your buying—that skepticism with regard to the existence of any such things as bargains in retail trade is so common. Often, indeed, it is the most indefatigable shopper who is most skeptical on this point, which, however, merely goes to show that over-sanguine expectations lead easily to irrational disappointments.

But there are also certain positive rules with regard to buying which may serve as supplement to the preceding "don'ts." Where the sum involved is sufficiently large or where an article is likely to be in constant demand a careful examination of the stocks of various retailers is usually worth while, whether or not any bargains are being advertised at the time. It is always of importance to ascertain and take into consideration the general reputation for honesty and fairness of the merchant with whom you are dealing. Fortunately information of this sort is much more easily obtained than that exhaustive knowledge of goods and values which one would require in order to be fortified against deception and overcharge. In this connection the purchaser would do well to remember the principle known as "the reaction of consumption upon production."[1] Every purchase of goods under given conditions is a vote, accompanied by material support, to continue those conditions. The application of a little conscience in such matters would discourage tremendously many of the shady practices now prevailing in retail trade.

With regard to bargains masquerading in the guise of odd

[1] See F. A. Fetter's Principles of Economics, ch. 41.

prices a rather greater degree of caution would seem advisable. Odd prices are doubtless clever enough with a rather meretricious sort of cleverness, but this will hardly commend them to careful buyers. If certain figures are intrinsically so attractive one wonders whether the merchants who put their trust in such figures do not neglect other and more solid advantages which they might offer their customers. Reductions of a cent or two on some few articles the regular prices of which are definitely known may be *bona fide,* but with regard to the values of the great majority of things offered for sale under an odd-price scheme the ordinary purchaser is not competent to judge, and consequently is likely to be deceived. There are many reasons, as we have seen, why goods frequently have to be reduced in price in retail trade, but there is no reason at all for believing that an excessively large number of these reductions should follow in such a series as 98, 79, 69, 49, and so on. Nor can one attach much weight to the argument that odd prices attract so much additional custom that they enable the merchant employing them to purchase in so much larger quantities and to so much better advantage that he can afford to make frequent *bona fide* reductions of a cent or two. Retail competition is far too complex; it involves, as we have already had occasion to observe, so many factors besides price alone that the effect of the one rather doubtful factor of odd prices, assuming other conditions equal, would count for comparatively little. And other conditions would seldom be equal. Moreover, the sort of custom attracted by odd prices and similar devices is apt to be much more fickle than that which is built up by conservative and less sensational business practices. There is always one advantage to the purchaser in looking over goods marked at round price points, namely, that he can consider alternate utilities of the various articles of about the same value he may need, undisturbed by differences of a cent or two in cost. On the other hand, if merchants string their prices up and down the scale in order to take advantage of

popular figures, purchasers too often succeed in "saving" two cents on a 98 cent article they do not need at the cost of the far greater utility of a dollar article they really do need. In the long run such results are good neither for sellers nor buyers. To quote proverbs, which notoriously can always be made to contradict each other: those who "take care of the pennies" in the hope that "the dollars will take care of themselves" should remember also that there is such a thing as a "penny wise, pound foolish" policy. Retail trade may need reforming in many particulars, but such reform can only come *pari passu* with the reform of retail buyers. Education for giving future mothers and fathers a knowledge of articles of common use, their qualities, prices, proper employment, markets wherein they are sold, and so on, is sadly needed. Until the public attains this knowledge and this point of view, odd prices and even more objectionable practices will continue to flourish.

SOME SEASONAL PRICE-VARIATIONS IN FOOD

[THE seasonal variation in the production of some farm products and the corresponding changes in prices have been studied by H. C. Taylor and published in Bulletin 209 of the University of Wisconsin Agricultural Experiment Station (May, 1911). By the courtesy of Professor Taylor we are able to reproduce with the diagrams the following passages. The facts here given illustrate interestingly the nature and limits of elasticity of demand for these articles, the problem of time-value in perishable foods, and the influence of cold-storage in equalizing prices throughout the year.]

Eggs; irregularity of supply. The egg market lends itself well to the study of many of the forces which influence

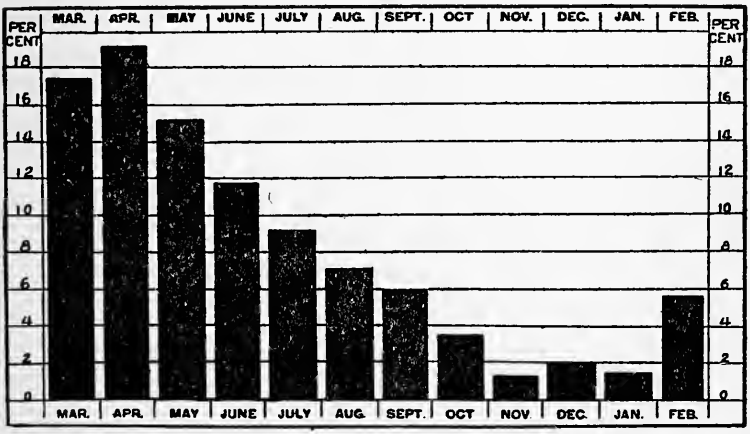

Figure 1. Production of eggs on a Wisconsin farm; percentages of the annual total by months, five-year average.

prices. Irregularity of the supply, variation in the quality of the product, and a highly elastic demand are characteristics strongly accentuated in the egg market. The monthly dis-

tribution of the average annual production of eggs on a Wisconsin dairy farm is shown in figure 1. The chart shows the percentage of the year's egg production gathered in each month in the year for five years. March and April were the months of greatest productions. The production fell off greatly during the summer months and reached its lowest level during the winter months.

It is believed that this chart tells fairly well the story of the irregularity of egg production on farms where the keeping of poultry is primarily for supplying the wants of the household, and the sale of eggs more or less incidental.

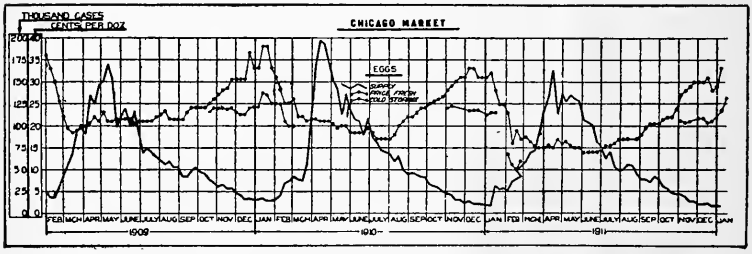

Figure 2. Weekly receipts and prices of "prime first" class eggs in the Chicago market, Feb. 1, 1909 to March 20, 1911.

It is possible for the poultryman to control the egg production in such a manner as to secure a much larger proportion of the annual product in the winter months, but the bulk of the egg supply is not produced under these conditions. . . . Egg production is a widely disseminated non-specialized industry and the supply is not likely to be appreciably influenced by the conscious action of a few individuals.

The Chicago egg market. The supply of eggs upon the Chicago market corresponds to these conditions of production. In Figure 2 the solid black line represents the weekly supply of eggs brought to Chicago, from February 1, 1909, to March 20, 1911. The supply of eggs reached the maximum in April and May and gradually fell off until the end of the year.

The price of eggs on the Chicago market shows the influ-

ence of the irregular supply. The black dots connected by lines, in Figure 2, show the price of the best grade of eggs for one day in each week.

The relation between the supply curve and the price curve in this chart illustrates the influence of variation in the supply upon the price of this perishable commodity. The fact that the price of eggs in Chicago remained above 20 cents during the periods of greatest receipts in 1909 and 1910 calls for

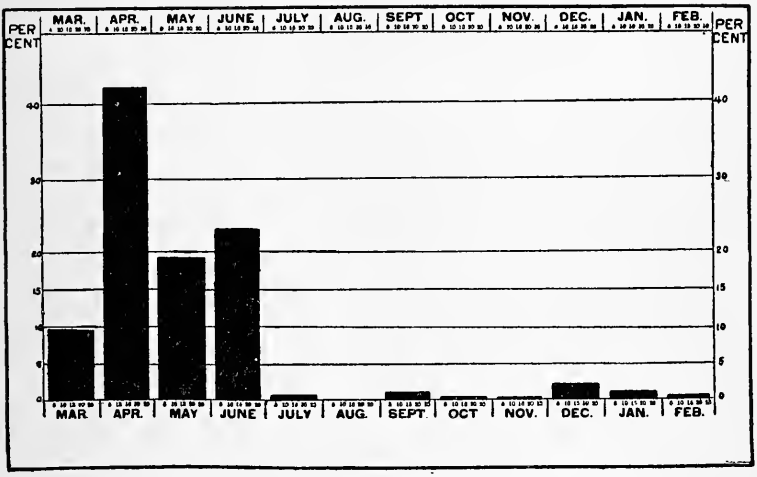

Figure 3. Storage of eggs by a Chicago firm; by months, in percentages of total annual storage.

some explanation. The elastic character of the demand for eggs has already been mentioned. At a price between 20 and 25 cents eggs become an inexpensive substitute for meat, and at the time of the year under consideration, weather conditions are usually such that eggs can be put upon the market in good condition. Under these circumstances the consumption of eggs expands enormously.

The storage of eggs. The market is not entirely dependent, however, at the period of maximum supply upon the demand for eggs for immediate consumption. At that period

many eggs are purchased and put in storage for use during the period of scarcity of fresh eggs. The time of year when eggs are put in storage by one Chicago firm is shown in Figure 3. Without question this speculative buying steadies the price during the spring months of excessive supply, distributes the consumption more evenly through the year, and secures for the producers a higher return for their eggs than could be secured without storage.

The stored egg is much less valuable in winter than is the fresh supply. The lower price curve shown for a few winter months in Figure 2 shows the prices of refrigerator eggs. It will be noted that there was often a difference of 10 cents per dozen between the price of fresh and of stored eggs. It should also be noted that the price at which the refrigerator eggs were sold was not very much higher than the price at which they were purchased. There must, in the long run, be enough difference to pay the actual costs of storage including rent for the warehouse, losses due to deterioration, interest on the money invested, insurance, and enough profit to induce a business man to give his attention to this business instead of doing something else.

The thing of first importance both to producer and to consumer is an understanding of the proper methods of handling eggs, proper methods on the farms, in the country stores, in transit, in cold storage, in the shop of the city retailer and in the homes of the consumers. Success in holding a part of the eggs of the surplus season to meet the demands of the deficit season is dependent upon proper handling at every point. It is safe to say that more bad eggs reach the kitchens of America from other causes than from too great a length of time in cold storage. Furthermore, many eggs that reach the kitchen in good condition are allowed to deteriorate in a warm room before the cook finds occasion to make use of them. There is responsibility all along the line. Failure at any one point spoils the egg.

The testimony before the Senate Committee relative to foods held in cold storage was to the effect that eggs produced during hot weather will not, even under most favorable conditions, remain fit for use over three months, and that more often in less than a month they are unfit for human food. This is reason for not storing eggs more than temporarily during the hot months, but it does not give basis for legislation against the storage of eggs in the cool months of spring to be kept over until the period of scarcity.

The risk is great in the storage of eggs, because of the fact that the whole supply must be gotten rid of before the increase in the supply of fresh eggs, or they may become almost a total loss. Note in Figure 2 how the price of refrigerator eggs fell, in February, below the price which had been paid for them and then quotations ceased. This speculative feature is accentuated by the fact that the period of greatest scarcity is followed so closely and so abruptly by the period of maximum supply, and by the uncertainty of the time of this change owing to the influence of the weather.

Another aspect of the storage of eggs worthy of consideration is the relatively long time between the surplus period and the period of scarcity. Vegetables may be stored late in the fall for winter use, but eggs must be stored early in the spring and kept through all the hot months. . . .

The supply and the price of butter. The relation of the supply to the price of butter on the Chicago market is shown by Figure 4. The weekly supply is shown to range from fifteen thousand to more than one hundred thousand tubs per week. The months of June and July show the greatest supply while the winter months show a scarcity of butter coming into Chicago.

June and July are the natural months for storing butter. From November to February is the period of short supply and high prices. See figure 5. In order to utilize cold storage as a means of equalizing the supply retailed to consumers,

a maximum period of eight or nine months is none too long.

The demand for butter is relatively stable. Butter is consumed from day to day with a high degree of regularity. To meet the demand butter must be produced in fairly even quantities each month in the year or the surplus of one season must be stored to meet the shortage of another. In the one case more feed must be produced and stored for purposes of

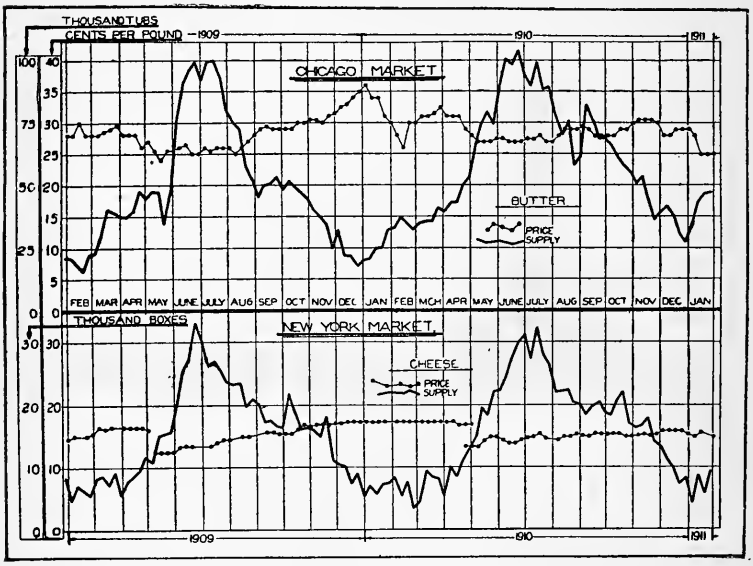

Figure 4 (upper part). Butter, receipts and prices, Chicago market; (lower part) Cheese, receipts and prices, New York market; Feb. 1909 to Jan. 1911.

winter dairying. In the other the cows may be allowed to graze while producing the maximum supply of milk. The cost of milk and butter is much lower where grazing is a large factor in the food basis of the dairy herd.

If butter can be stored successfully, there can be little question as to the economic gain resulting from its storage. If there is any doubt as to the successful keeping of butter in cold storage, great effort should be expended in the solution

of this problem, rather than to abolish the storage of butter during June and July for consumption in the winter months. This is a matter of great moment to the butter producers of Wisconsin. Without cold storage our dairy industry would have to be reorganized. With the present system of storing the surplus, the price of butter as shown in Figure 4, holds steady at a fair price during June and July. Without cold

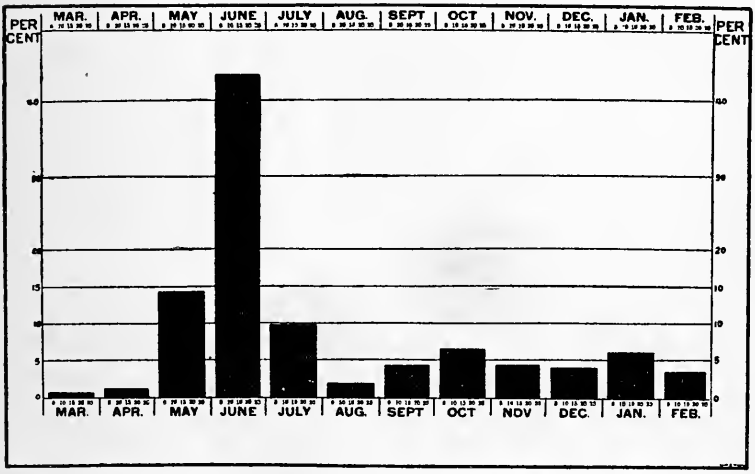

Figure 5. Cold storage of butter, by months, by one Chicago firm, in percentages of total annual storage.

storage the supply would have to be reduced during that period, or the bottom would go out of the market.

Any influence which retards the storing of butter during the natural season of surplus production will increase the price of butter during the winter months and give greater advantage to the manufacture of butter substitutes. Some of the raw material for the manufacture of butter substitutes are more abundant in the winter than in the summer months. Butter substitutes are made of farm products. To discriminate against them is to damage one class of farmers for the benefit of another class. The substitute, however, should

never be sold for butter. This much the dairyman has every right to insist upon. The butter substitute should be sold for exactly what it is with its constituents marked on the label. The butter substitute will continue to be a strong competitor of the inferior grades of butter and may result in a wider range in prices between first-class and the inferior grades of butter than would otherwise exist. There is little competition between first-grade butter and the substitute. The re-

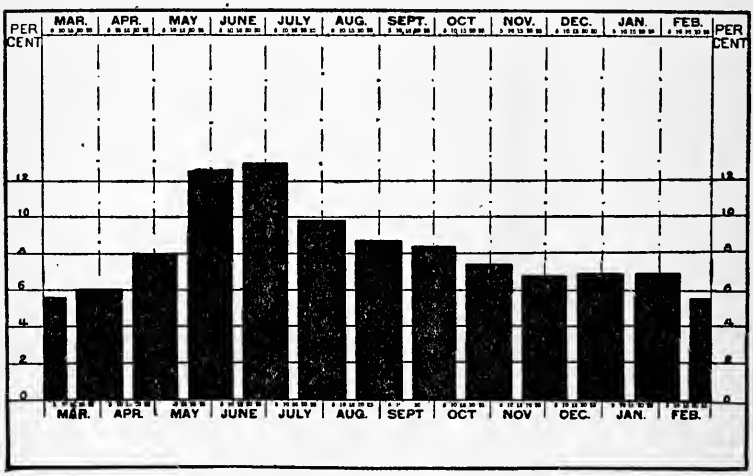

Figure 6. Milk brought to the Wisconsin University creamery, by months, in percentages of total annual quantity, three-year average.

sult may be that the producers of low-grade butter will have to improve their methods or change their occupation. In the long run this will be a good thing both for the producer and the consumer.

The supply and price of cheese. The price of cheese shows but little variation during the different seasons of the year. The supply, however, is produced in the summer months, and the bulk of it reaches the market during the summer and fall. Figure 4 shows the receipts and the price of cheese on the New York market for two years. One character-

istic of cheese is that it improves with age and hence the price of the stored product is higher than that of the fresh supply. This is illustrated in the chart where there are two sets of price dots, in April, 1910, the upper being quotations for old cheese, the lower for new. Contrast this with the situation on the egg market where the reverse is true. (Figure 2.)

MARKETING OF FARM PRODUCTS

[THERE is here reprinted the greater part of a paper on "Methods and Costs of Marketing," by Frank Andrews, in the Yearbook of Department of Agriculture (U. S.) for 1909, pp. 161–172.]

Finding a market; selling in transit. One of the primitive ways of finding a market is for the farmer to go with his wares from house to house, or from store to store, making inquiry until a purchaser is found. An application of this simple plan is made on a large scale in the marketing of live stock. A car of cattle consigned from a Kansas shipping point to Chicago may be unloaded and placed on sale at Omaha or Kansas City. In case no sale is made at one of these stopping places the stock is forwarded to Chicago. This practice is common on most of the important live-stock routes of the United States.

Grain also frequently changes hands at an intermediate market through which it passes, and the cars thus sold may be forwarded to destinations selected by the new owners. Regular quotations of prices are made at Chicago and other cities for grain in cars billed through to eastern markets from shipping points in the Middle West. Wheat raised in the Canadian northwest and shipped to the seaboard through North Dakota and Minnesota, for reëntry into Canada by way of the Great Lakes, often changes hands at Duluth.

Diversion of shipments. Another method of searching for a market is that of diverting a consignment to a destination other than the one first named in the shipping papers. An illustration of this is the practice common in the grain exporting business of the Pacific Coast. It is usual for a cargo of wheat or barley sent from this coast to Europe to be con-

signed "for orders" to some port in the British Isles, as Queenstown, Falmouth, or Plymouth. After the vessel starts, the exporter tries to have a purchaser ready to bargain for the cargo when it reaches the port of call. The voyage around Cape Horn takes three or four months and this time is allowed the exporter for finding a suitable market. On its arrival at the port of call, the vessel receives orders as to the port at which the grain is to be discharged.

A similar plan is followed in shipping fruit by rail from California to the East. Two of the diversion points on these routes are Council Bluffs, Iowa, and Minnesota Transfer, a freight yard between St. Paul and Minneapolis.

Other important instances of this practice of diverting a consignment en route are afforded in the movement of fruits and vegetables from Southern States. A commission firm, whose head office is in Pittsburg, distributes its marketings in this way. On receipt of a telegram, say, from a Georgia shipper, announcing that he has a car ready to move, the head office of this firm decides at once the general direction for the car to go. If the West promises the best markets for the next several days, the shipper may be notified to consign to Cincinnati, or if the car is to go to an Eastern city, the consignment may be made to Potomac Yard, a freight transfer point on the Potomac River opposite Washington, D. C. At each of these diversion points a representative of the commission firm opens the cars, inspects the contents, and reports the results by telegraph or telephone to the Pittsburg office, which is kept informed of market conditions in different cities. The agent at the diversion point will then receive orders as to the final destination of the car. Among the diversion points used for shipments of produce from the Southwest are Kansas City, St. Louis, and Chicago.

Public city markets. Public market places are established in a number of cities and towns and in these places consumers may buy such articles as fruit, vegetables, dairy products, poultry, and eggs direct from farmers as well as from dealers.

In recent years there has been a tendency in some markets, as at Baltimore, Norfolk, and Washington, for practically all of the stalls to be used by dealers, while the producers occupy places along the neighboring sidewalks.

Market places are owned sometimes by city governments and sometimes by private corporations. In Washington, D. C., the largest markets are under private ownership, while in Baltimore the largest markets belong to the city. In York, Pa., there is one market owned by the city and five by private parties.

At some markets the only accommodations are those afforded by an open square, as one of the markets at Omaha, Neb., and one at Richmond, Ind.; other places have open sheds, and still others are furnished with market houses. Some of the most noted markets of the United States are held under open sheds; the French Market in New Orleans and Lexington Market in Baltimore are both of this type. Among the numerous cities which have market houses are Pittsburg, Pa., Mobile, Ala., Buffalo, N. Y., Erie, Pa., Salem, Mass., Washington, D. C., Richmond, Va., Norfolk, Va., and Baltimore, Md.

The charges for space along the curb at some markets range from 10 cents to 75 cents per day for each wagon, and by the year from $10 to $50 or more. At Atchison, Kan., and also at San Antonio, Tex., a charge of 10 cents a day is made for each wagon occupying a place in the market, while at Buffalo, N. Y., the rate for a one-horse vehicle is 15 cents and for a two-horse wagon 25 cents per day, and at Norfolk, Va., these rates are respectively 10 and 15 cents. At Richmond, Ind., and Omaha, Neb., spaces in the market are sold at auction to the highest bidder.

Producers sell in large quantities to dealers and deliver to commission men at public market places similar to the ones devoted to retail trade, and in many of the retail markets wholesale dealing is also done. The public market places of Omaha, New York, and Denver are used almost exclusively

for wholesale trade, and so are wharf markets in Pittsburg, Baltimore, and Washington.

Warehouses. Another institution which aids the producer to dispose of his crop is the public warehouse. Illustrations of this are afforded in marketing tobacco in Virginia and North Carolina, wool from the northern Rocky Mountain States, and to some extent rice in Louisiana and Texas. The growers, or their representatives, with their produce, meet the buyers at these warehouses. The method of operation in Virginia may be illustrated by the conditions at Richmond. The warehouses here are listed and market begins in the first one on the list for a certain day. After sales have been made in the first buyers go to the second, and so on throughout the list. Planters arrange their tobacco in piles along the floor of the warehouse, each pile being identified by a label or card attached to it. As the piles are auctioned off each buyer has some mark of identification attached to the pile purchased, and a record is made by the warehouse authorities. On leaving the warehouse the planter obtains his money from the warehouse manager, who in turn makes up a bill against each buyer for the total amount of tobacco he has bought that day. After the last warehouse sale has been made the market is continued at the Tobacco Exchange, where dealing is based upon samples displayed there. The importance of this system may be judged by the quantity of tobacco sold in these warehouses by farmers. The total sales by farmers at twenty-one Virginia markets having tobacco warehouses amounted during the nine months ending June 30, 1909, practically the entire season, to 116,000,000 pounds; and in the fiscal year ending July 31, 1909, the sales by planters in the warehouses of forty-five North Carolina markets amounted to 142,000,000 pounds.

In selling rice at warehouses or on the New Orleans Board of Trade, sealed bids are submitted by the buyers and the sale is expected to be made to the highest bidder. In cities as far west as Chicago it is a common practice to sell fruit in

warehouses which may be owned by railroads and used by auction companies. A consignment of California or Georgia fruit, for instance, will be sent to a commission merchant in New York, who will have the fruit sold to his account by the auction company.

Stock yards. The largest wholesale market places open to the producers are the stock yards in such cities as Chicago, Kansas City, Omaha, and St. Louis. Sales in these stock yards may be made direct by the owner of the stock to the ultimate purchaser, but it is customary for transactions to be made through commission men.

Different classes of middlemen; traveling buyers. Selling to buyers who come to the farm is practised to some degree in many parts of the United States. Traveling hucksters in many regions go from farm to farm gathering eggs, butter, poultry, calves, and similar commodities, which they sell to shippers, jobbers, or retail dealers. Agents of large merchants go to farms on the Pacific coast to buy hops, to ranges in the Rocky Mountains for wool, to plantations in Louisiana and southeastern Texas to bargain for rice, and to the orchards of the apple-producing states east of the Rocky Mountains. The cattle buyer also is a frequent visitor at many farms, especially where stock raising is a secondary industry.

General merchants. One of the most important persons in the distribution of some products is the merchant of the town or the rural community. He is often the first receiver of such products as eggs, farm-made butter, poultry, wool, hides, and sometimes cotton, grain, and hay. It was the custom a number of years ago, possibly more so than at present, for a local merchant to credit a planter of cotton or rice with supplies for a crop year, and to take a lien upon a growing crop to cover the value of the merchandise thus sold. In such a case it was frequently the custom for the crop when ready for market to be turned over to the merchant by the planter, who received the difference between his debt and the proceeds from the crop. The importance of the country mer-

chant as a distributing factor in some regions is diminishing, for he has been supplanted to a greater or less degree by dealers in special products.

Local buyers of special products. In the regions where grain is a staple product the tendency has been for the storekeeper to be displaced by the grain dealer and the local elevator man. Among other examples of local buyers of special produce are the California fruit packer, who buys from growers; the egg and poultry shipper in the Middle West, whose purchases are made from country merchants and who ships by carload lots to wholesale dealers; the San Francisco wool merchant, who buys on the range and sells in the East; the poultry packer in the North Central States, who buys live fowls, slaughters them, and consigns to eastern cities; and the "track buyers" of watermelons in the region near San Antonio, Tex., of peaches in Georgia, and of hogs in the corn belt.

Commission dealers. The commission dealer is the agent through whom a large amount of produce is sold for farmers or country shippers. The commission man usually represents the seller, but there are instances where he serves as agent of the buyer, as in some sales of live stock to distant buyers or in the purchase of Pacific coast hops for eastern dealers.

In addition to serving as agent in making a sale, the commission man may advance money to a producer or to a country buyer, as when a live-stock commission firm loans money to feeders or when a grain-commission firm supplies a local grain dealer with sufficient cash to begin his season's purchases. Another phase of commission dealing is that engaged in by rice and cotton factors, who advance money on crop liens, and to whom these products are frequently consigned to be sold on commission. In some States, for instance in South Carolina, banks are reported to be taking the place of the cotton factors in making loans, and the presence of buyers and neighboring mills enables planters sometimes to market their cotton with-

out the aid of factors. Another class of factors are those in the Baltimore tobacco trade, who receive consignments, for instance, from farmers in Maryland and Ohio, and who sell to exporters.

Commission for selling.[1] Rates of commission for selling fruits and vegetables may range from 5 to 10 per cent. of the gross proceeds of sales. A coöperative organization of farmers is sometimes able to retain part of this selling commission for its own use. The members of one southern fruit association paid for selling their products 10 per cent. of gross proceeds, of which generally 6 per cent. was given the northern commission dealer and 4 per cent. was retained in the treasury of the association. There are numerous other instances of commissions based upon proceeds of sales, among which may be mentioned the charges for selling rice at New Orleans and clover seed at Milwaukee.

For selling grain and live stock at large markets the rates of commission are based generally upon the quantity sold and not upon proceeds of the sales. The rules of the Minneapolis Chamber of Commerce fix the rate for selling wheat, barley, or rye at 1 cent per bushel, corn or oats at one-half cent per bushel, and hay at 50 cents per ton. These rates apply to produce received under usual conditions. About the same charges prevail in other large markets.

In the tobacco warehouses of Virginia and North Carolina auctioneers' charges are determined by the number and weight of piles sold, and the "commission agents" who buy hops for wholesale dealers are frequently paid from one-fourth to one-half cent per pound.

Exporters. The exporter's business has some points in common with that of the local buyer in domestic trade; both classes of middlemen obtain their wares from sources relatively near at hand, and sell them in a distant market, either direct or through commission dealers. The exporter has to keep informed not only concerning the commercial regulations

[1] [Paragraphs from p. 162, here inserted.]

and market conditions of various countries, but also in regard to freight rates along the various lines of transportation over which his goods are apt to be carried. The fluctuations of freight rates, especially by water, make the cost of transportation lowest sometimes over one route and sometimes over another. In shipping wheat from Nebraska to Liverpool the grain may be sent through one of eight or ten large seaports ranging from Montreal around the coast to Galveston; and at a number of these ports tramp ships may be bidding against the regular lines for cargo. In case New York is selected as the port of shipment, the grain may be sent thither direct from Nebraska, or it may be transferred to a lake steamer at Chicago, to be reloaded at Buffalo either on canal boats or railroad cars.

In the grain business of the Pacific Northwest and in the cotton trade of the South it is not uncommon for the same firm that buys from the farmer to sell to the European miller. A grain exporter of Portland, Tacoma, or Seattle sometimes owns as many as 200 warehouses at different country railroad stations, and his agents at these stations buy direct from the farmers and consign to the seaport; while in Europe agents or correspondents of the same firm seek out buyers for the grain. But east of the Rocky Mountains the exporter of wheat, while he may sell through his representatives to foreign mills or dealers, in many instances does not buy either from the producer or the country grain dealer. His supply is often furnished by commission men or large dealers.

In addition to the five classes of middlemen just discussed, others of importance in the distribution of farm products are the jobber, who buys and sells in wholesale lots, and the retail dealer, the last of the series of middlemen who handle the commodity on its way from the producer to the consumer.

Direct sales without aid of middlemen. Common instances of the producer selling direct and delivering to the door of the consumer occur in the marketing of milk, butter, eggs, poultry, fruits, vegetables, hay, and other farm products.

Milk producers in the neighborhood of Erie, Pa., through their organization, deliver milk direct to consumers. Numerous poultry raisers sell exhibition stock direct to other poultry raisers. Eggs for hatching are also sold in this way. Registered cattle are often sold at auctions, held periodically by the owners. Retail sales of fruit, vegetables, poultry, eggs, and dairy products direct by producer to consumer are made also in public market places.

In a sense, a mill or a factory may be regarded as a consumer. An old instance of the producer selling in wholesale lots direct to the consumer is that of the farmer taking his grain to a near-by mill. A sale of sugar beets to a neighboring factory is another example of direct bargaining between producer and consumer; so is the sale and delivery of milk to a creamery, apples to an evaporating establishment, and fruits and vegetables to neighboring canning houses.

Selling at wholesale direct to consumer is illustrated also by a plan recently adopted by wool growers of the northern Rocky Mountain region. Large warehouses are established at Chicago and Omaha to which wool is consigned to be sold by the growers or their representatives. Manufacturers as well as dealers are among the buyers, so that part of the sales are made direct by the growers or their agents to consumers. Not only are direct sales by producer to manufacturer made in the warehouses, but on the range itself, for since the establishment of warehouses manufacturers and dealers have continued to send some of their buyers to the range.

One of the prominent woolgrowers of Wyoming reports that since the establishment of the large warehouses prices on the range have been much better. For the sake of supporting the warehouses the stockholders agree to pay into the association a certain percentage of their gross sales of wool, whether sold on the range or in the warehouses. This method of supporting a coöperative institution is adopted also by the Georgia Fruit Growers' Exchange.

Transfers through one middleman. A large number of

transactions are made in which only one middleman assists in the transfer from producer to consumer. A common example is that of the town merchant who buys produce from farmers and sells it to consumers.

Among the other instances of a single middleman intervening between producer and consumer may be noted the commission man at a large market who receives consignments of live stock from farmers and sells to packers; the factor to whom the planter consigns his rice or cotton and from whom purchases are often made by millers; the warehouseman who manages the sale of a Virginia planter's tobacco; and the "line," or system, of elevators, which buys grain from farmers and sells to millers. Pennsylvania tobacco is often bought at the farm by a dealer who sells to manufacturers.

It is a common practice in a number of cities—for instance, New York, Philadelphia, and Washington—for milk to be handled by one middleman, namely, the city retailer, who buys direct from the producer. A considerable part of the supply of New York City is delivered at country shipping points to stations or "creameries" owned by New York dealers, who sell in the city at retail.

An organization which brings the grain producer nearer the great mills is the farmers' elevator. The plan of its operation has some features similar to that of the wool warehouses of Chicago and Omaha. Farmers coöperate in building an elevator and in employing a manager.

Marketing through two middlemen. The intervention of two middlemen between producer and consumer is a common occurrence. The farmer may consign to a distant commission man or sell to a local dealer, and the next transaction of the series may be the sale to a retail merchant whose customers are consumers. A common way of marketing live stock is for the farmer to sell to a buyer who ships to a commission merchant at a large packing center, where the animals are sold frequently to packers. Fruits and vegetables are marketed often through the aid of two middlemen, the city commission

dealer and the retail merchant. Two middlemen are involved also in some sales of produce made by farmers' coöperative societies; the first, unless the sales manager of a society be classed as a middleman, being the wholesale or the commission dealer, and the second the retail merchant.

The milk supply of Boston is distributed largely through two successive middlemen, the wholesale and the retail dealer; and another series of two middlemen consists of the traveling huckster in Massachusetts and elsewhere, who buys poultry from farmers and sells to retail merchants. Hop growers of the Pacific coast frequently sell direct to commission men who buy for large dealers, and these dealers in turn make part of their sales to brewers.

Transactions involving three or more middlemen. A series of three middlemen may include, first, the local buyer or shipper; second, the commission dealer or the wholesale merchant; and third, the retail merchant. Watermelons from the region of San Antonio, Tex., are reported to be distributed in considerable quantities through such a series of dealers. Traveling hucksters in Missouri buy poultry from farmers and sell occasionally to merchants or to commission firms, who in turn include among their customers some retail dealers. Apple dealers in this country purchase the fruit from growers and sell to United States agents of German importers. The third in this series of middlemen is the retail dealer in Germany.

In the sale of fruit by auction, as is common in large cities east of the Mississippi River, the auctioneer is an additional middleman. He may sell for a commission dealer to whom the consignment may have been made by a country buyer; and the purchaser at such an auction may be a jobber, who in turn sells to a retail merchant. Five middlemen are thus concerned in such a transaction.

Another instance of a long series of middlemen may be had in some exports of wheat from North Dakota to England. The grain may be bought first by a country grain dealer, con-

signed to a middleman at Duluth, bought there by an exporter, who in turn sells through his European agent to a foreign grain dealer. The last of the series of transactions may be the sale by the foreign merchant to the miller. Hay, in many parts of the country, is frequently bought by a local merchant who sells through a commission man to a wholesale dealer. Or again, the commission man may sell to an exporter who ships direct to an importer in Cuba, and one or more additional sales may be made before the hay reaches the last purchaser.

Onions raised in Kentucky are sometimes bought by a local merchant and shipped to Louisville; here they may be put in sacks and consigned to a New York wholesaler or a commission man, who in turn sells to a New York retailer. Eggs and poultry frequently pass through the hands of at least four middlemen.

The marketing of clover seed is an example of a transfer from one farmer to another through a number of middlemen. The first middleman may be an Indiana shipper who consigns to a commission dealer in Toledo; here the seed may be purchased by a merchant and shipped to a wholesale dealer in a distant city; the last middleman in this course of distribution may be a country storekeeper or a city dealer in agricultural supplies.

Terms of sales. Reference is made in other parts of this article to conditions affecting payments for produce. Cash payments, as has been said, are most general, but when a farmer is to make a delivery to a distant purchaser, it is often the practice for the payment to be made by means of a draft attached to a bill of lading. By selling for a definite price fixed before the sale is made, the farmer knows at the time of sale the exact amount he is to receive, but he may be at a disadvantage owing to lack of competition among buyers or to his failure to keep posted concerning market conditions. On the other hand, if he ships his produce to be sold on commission, he risks being disappointed with the proceeds of the sale.

Some of the disadvantages of selling at or near the farm are being overcome by improved conditions which open to the farmer other markets in case the one at home is not satisfactory. The use of the telephone enables him to know the latest market news, and the service of a coöperative selling association makes it easier for him to take advantage of favorable prices in distant markets.

Some produce is sold in advance of the harvest; for instance, in New York, Maryland, and Michigan vegetables are grown for canning houses under contracts made sometimes as early as the preceding midwinter. The terms of these contracts vary. According to some of them the canner furnishes the seed and fertilizer and agrees to make advances of money during the season and a final settlement at the end. Contracts providing for the sale of three successive crops at a fixed price are reported to have been made in 1908 with some hop growers of Washington and Oregon.

Coöperative selling associations. The number of farmers' coöperative associations through which produce is marketed is increasing continually. Various fruits and vegetables, grain, tobacco, peanuts, rice, and other products are sold by the agents of such associations. In the State of Colorado alone there were in 1907 at least thirty-three such organizations and the products handled by them included cantaloupes, peaches, honey, potatoes, and miscellaneous fruits and vegetables. A number of California associations have united to form larger bodies through which sales are made, while the local organizations pack and load the produce.

At least two produce exchanges have been conducted successfully for a number of years by truck growers of the peninsula lying between the Chesapeake Bay and the Atlantic Ocean. The cranberry crop is marketed largely through farmers' organizations, and similar associations, too numerous to be listed here, are improving conditions of marketing in other parts of the United States. The extent to which the coöperative movement among farmers is distributed may be illus-

trated by the apples from Hood River, Ore., which are marketed in this way; fruits and vegetables from Yuma Valley, Ariz.; celery from Florida, cantaloupes from Tennessee, onions from central and western Texas, tobacco from Kentucky, grain from Minnesota and North Dakota, rice from Texas, peaches from Georgia, vegetables from Louisiana, and various articles from Michigan, in addition to a large number of products from California.

Two of the important results of coöperation in marketing have been the shipment of better grades of fruits and vegetables, and the command by the farmers of a greater influence in the market on account of large quantities of produce being controlled by a single authority.

FARM PRODUCTS AND CONSUMERS' PRICES

[The following passages are from the report of the Secretary of Agriculture (U. S.) for the year 1910, pp. 9–28.]

Production of 1910. Year after year it has been my privilege to record "another most prosperous year in agriculture." Sometimes the increased prosperity has been due to weather unusually favorable to agriculture, sometimes to higher values caused either by a greater yield or demand or by greater money returns due to a scant production; but usually the advance in farmers' prosperity has been in spite of various drawbacks. It would seem that this country is so large in extent and has such varied climate, soil, and crops that no nation-wide calamity can befall its farmers. Combined with this strong position in agriculture, the nation may now begin to derive increased confidence in its agriculture because of improvements that are permeating the whole country in consequence of a grand movement sustained by the National Department of Agriculture and the various State agencies.

Value of all products. Nothing short of omniscience can grasp the value of the farm products of this year. At no time in the world's history has a country produced farm products within one year with a value reaching $8,926,000,000, which is the value of the agricultural products of this country for 1910. This amount is larger than that of 1909 by $305,000,000, an amount of increase over the preceding which is small for the more recent years.

The value of farm products from 1899 to the present year has been progressive without interruption. If the value of that census year be regarded as 100, the value of the agricultural products was as follows:

1899	100.0	1903	124.8	1907	158.7
1900	106.4	1904	129.8	1908	167.3
1901	112.7	1906	143.4	1909	182.8
1902	119.1	1905	133.	1910	189.2

The value in 1910 is almost double the value of the crops of the census year eleven years preceding. During this period of unexampled agricultural production, a period of twelve years during which the farmers of this country have steadily advanced in prosperity, in wealth and in economic independence, in intelligence and a knowledge of agriculture, the total value of farm products is $79,000,000,000. . . .

Rising yields per acre [Page 27]. Dividing the period from 1866 to 1909 into four decades and a succeeding short period of four years, the yield per acre of corn is shown by a study made in the Bureau of Statistics to have declined 2.3 per cent. from the first decade to the second, declined 8.2 per cent. from the second to the third, increased 7.7 per cent. from the third to the fourth, and increased 7.1 per cent. from the fourth decade to the succeeding four-year period.

For wheat an even better showing is made, since the figures show a continuous increase in yield per acre, namely, 3.4 per cent. from first decade to second, 3.3 from second to third, 6.3 from third to fourth, and 9.6 from fourth decade to final four-year period.

For cotton, the first figure, 2.8, is a decline, but the rest are increases, namely, 2.6, 3.8, and 0.3.

For tobacco, the first figure, 3.4, is an increase, the second 2.0, is a decline, the third, 5.2, is an increase, and so also is the last, 9.7.

Similar facts are shown for six other leading crops, namely, oats, barley, rye, buckwheat, hay, and potatoes. Not one of the ten crops named declined in yield per acre from the third decade to the fourth, while oats was the only one to show a decline from the fourth decade to the last period of four years.

The evidence is very plain that the yields per acre of our crops are now increasing, and if the facts were assembled in

detail for the States, it would be found that the percentage of increase in yield in many of them is greater than the percentage of normal increase in population; that is, the increase by births over deaths in the old native element. Such is the fact with regard to wheat for the fourth decade, as compared with the preceding one, in twenty-six States, and two of the States are all but ready to join them. In fourteen States corn production per acre has increased faster than the normal increase of population and this is almost true of five more States. The number of States in this list in the case of barley is 21; rye, 30; buckwheat, 19; cotton, 3; potatoes, 24; hay, 35; and more or less States are almost ready to enter this list in the case of all crops.

A demand that is more difficult to fulfil in production per acre is for an increase that equals or exceeds the actual increase of population, including the immigrants and that due to the temporary high birth rate of the foreign born. But, notwithstanding the fact that this difficulty is greater in the United States than it is in all other countries that have practically ceased to take much new land into cultivation, many of the States of this nation are each maintaining an increase of production in the case of one or more prominent crops that is greater than the actual increase of population. Ten States are doing this in the case of corn; for wheat the number is 22; for oats, 16; for cotton and tobacco, 1 each; for rye, 21; for potatoes, 15; and for hay, 25.

We cannot look for any other result than that the yields per acre of all our crops shall increase at an even faster rate in the future, in view of the intense interest with which our people are turning their attention toward agricultural improvement. If there are certain forces at work which, if unchecked and made more prevalent, will in the future compel us to bid against the world for food, the counteracting forces have nevertheless been already set in motion, with the promise of increasing effect.

Farmer's share of consumer's cost [page 19]. High prices

was one of the subjects of my annual report of 1909. It was shown that for many years previous to about 1897, or a little later, the prices of farm products received by farmers were even less than the cost of production, and often little if any above that cost, so that during a long period of years the farmer was not thriving. It was shown also that in the upward movement, which began about 1897, the prices received by the farmer have advanced in greater degree than those received by nearly all other classes of producers. That this should have been so was merely a matter of justice to the farmer to equalize the reward of his efforts with the rewards in other lines of production.

Increase of beef prices. The price received by the farmer is one thing; the price paid by the consumer is far different. The distribution of farm products from the farm to consumers is elaborately organized, considerably involved and complicated, and burdened with costly features. These are exemplified in my report for 1909 by a statement of the results of a special investigation into the increased cost of fresh beef between the slaughterer and the consumer.

It was established that in the North Atlantic States the consumer's price of beef was 31.4 per cent. higher than the wholesale price received by the great slaughtering houses; 38 per cent. higher in the South Atlantic States; and 39.4 per cent. higher in the Western States. The average for the United States was 38 per cent. It was found that the percentage of increase was usually lower in the larger cities than in the smaller ones and higher in the case of beef that is cheap at wholesale than of high-priced beef. It was a safe inference that the poorer people paid nearly twice the gross profit that the more well-to-do people paid.

The farmer and milk prices. Another investigation into the increase of prices in the process of distribution was made in the last week of June, 1910. This time the object was to discover what fraction of the consumer's price was received by the farmer. It was a time of high prices, of high cost of

living, and the aim was to ascertain to what extent the farmer received a return out of the high consumer's cost of farm products.

The investigation covered seventy-eight cities scattered throughout the United States, and the information was contributed by a large number of the Department's crop correspondents and by some of its special agents who made inquiries in all of the seventy-eight cities. The cities were divided into geographical groups for the purpose of computing averages, and these were combined into an average for the United States, all after proper weighting according to importance.

Milk was one of the commodities under investigation—a food product indispensable to a large fraction of the families of the nation, and now a costly one to all consumers. While it is true that the dairyman is receiving considerably more for his milk than he did before the present era of high prices, yet it was discovered in this investigation that throughout the United States he receives a scant 50 per cent., or one-half of the price paid by the consumer. The other half goes to the railway company for carriage, to the wholesale milk dealer, if there is one in the chain of distribution, and to the retailer who delivers at the consumer's door.

Freight charges for carrying milk vary according to distance, but their average may be regarded as approximately about 7 per cent. of the consumer's price. With the farmer receiving about 50 per cent. of that price and the railroads 7 per cent., the remaining 43 per cent. of the consumer's price is received mostly by the retailer.

The milk wagon of the retailer has a long route. It stops at a house or two in one city block, perhaps passes several blocks without stopping, and so proceeds to serve customers thinly distributed along a route of miles. At the same time the milk wagons of other retailers are covering various portions of the same route, and so there is a great waste of effort and of expense in the distribution.

The division of States in which the cost of distributing milk

from producer to consumer is the most is the North Central group, in which producers receive 44 per cent. of the prices paid by the consumer. Next in order follow the Western States with 47 per cent., the North Atlantic States with 53 per cent., the South Central States with 55 per cent., and the South Atlantic States with 57 per cent.

The average price paid by consumers in the seventy-eight cities is almost exactly 8 cents per quart. In the North Atlantic and North Central States the average is 7.5 cents; in the Western States, 8.9 cents; in the South Central, 9.1 cents; and in the South Atlantic States 9.3 cents. These prices are for the last week in June, 1910.

Size of retail unit, and of farmer's percentage [page 22]. The general fact was that the producer's percentage of the consumer's price diminished as the quantity sold at retail was smaller. For instance, the apple grower received 55.6 per cent. of the consumer's price when the consumer bought by the bushel and 66 per cent. when the purchase was by the barrel. When the consumer bought corn by the bushel, the farmer got 70.6 per cent. of the price, but when the purchase was by the barrel the farmer received 81 per cent. The strawberry grower received 48.9 per cent. of the consumer's price in purchases by the quart and 75.9 per cent. in purchases by the crate. A still better illustration is found in the case of onions. In [purchases made] a peck at a time, the farmer received 27.8 per cent. of the retail price; in purchases of a barrel, he received 58.3 per cent.; and in purchases by the 100 pounds, he received 69 per cent. So in the case of oranges, when the purchase was by the dozen the grower received 20.3 per cent. of the consumer's price, whereas when the purchase was by the box the grower received 59.3 per cent.

Price gains from consumer's point of view [page 24]. In the consideration of this subject so far, the aspect has been that of the producer; the farmer thinks of the price that the consumer pays for farm products and compares with them the price that he himself receives. While the farmer is look-

ing forward with regard to the prices of his products, the consumer is looking backward, and so regards the prices that he pays as increases upon what the farmer gets. This aspect of the matter may now be worth some attention.

It is established by the investigation of this Department made last June that the milk consumers of seventy-eight cities paid for milk an increase of 100.8 per cent. above the price received by dairymen; in other words, the farmer's price was fully doubled. The lowest increase among the geographic divisions was 75.5 per cent. in the South Atlantic States and the highest was 111.9 per cent. in the Western States.

In the purchase of butter the consumer pays 15.8 per cent. above the factory price in the case of creamery prints, 15.6 above in the case of factory tub, and 13.3 per cent. above the factory price in the case of renovated butter. The percentages of increase among the five divisions of States do not vary much from the averages for the United States.

Some large percentages of increase of prices were found by the Industrial Commission—135.3 per cent. for cabbage bought by the head; 100 per cent. for melons bought by the pound, for buttermilk sold by the quart, and for oranges sold by the crate; 260 per cent. for onions bought by the peck; 400.4 per cent. for oranges bought by the dozen; 111.1 per cent. for strawberries bought by the quart; and 200 per cent. for watermelons sold singly.

There were many cases of increase of consumer's price over farmer's price amounting to 75 per cent. and over, but under 100 per cent., and among these were 90.5 per cent. for apples bought by the barrel and 80.6 per cent. for apples bought by the box; 75 per cent. for chickens bought by the head; 83.4 per cent. for onions bought by the pound; 80.5 per cent. for potatoes bought by the bushel; 88.8 per cent. for poultry in general bought by the pound; 95.8 per cent for strawberries bought by the box; 82.5 per cent. for sweet potatoes bought by the bushel.

It may be worth while to extend the list of farm products that are sold to consumers at a large increase above farm prices. In the class of commodities selling for an increase of price amounting to 50 per cent. and over but under 75 per cent. above farm prices, may be mentioned the following increases: 61.8 per cent. for cabbage bought by the pound; 66.7 per cent. for celery bought by the bunch, turnips and parsnips bought by the bunch, and green peas bought by the quart; 54.4 per cent. for chickens bought by the pound; 50 per cent for eggplants bought by the crate; 68.4 per cent. for onions bought by the bushel; 68.7 per cent. for oranges bought by the box; 60 per cent. for potatoes bought by the peck; 59.8 per cent. for turkeys bought by the pound.

The import price of coffee in the fiscal year 1910, which was 8 cents a pound, after the increase to 20 and 35 cents per pound to the retailer, has risen in price to the consumer from 150 to 337.5 per cent. So with tea of the same fiscal year; its import price of 16 cents per pound, after being increased to 50 to 70 cents per pound, cost the consumer an advance of 212.5 to 337.5 per cent.

Before assigning to middlemen the various increases of prices, it is proper to deduct the percentage due to freight rates. The freight charge for milk received in New York is about 18 per cent. of the producer's price, and in Chicago about 14.7 per cent. Of the import price of coffee, the ocean freight charge from Rio Janeiro is 3.6 per cent. The percentages of farm price for which freight charges stand in the United States may be estimated at approximately 0.9 of 1 per cent. of the factory price for butter; 1.2 per cent. of the farm price for clover seed; 1.6 per cent. for cotton; 1.3 per cent for eggs; 13.6 per cent. for apples; 4.8 per cent. for beans; 14.8 per cent. for potatoes; and 5 per cent. for sweet potatoes. The rates for oats, rye, barley, and wheat are nearly the same, ranging from 6 per cent. for oats to 7.3 per cent. for barley and rye. The rate for corn is 9.2 per cent. and the average

for all grain is 7.7 per cent. For hay the percentage is 15.8 per cent.; for cattle and hogs, 2.5 per cent.; for live poultry, 4.5 per cent.; and for wool, 0.6 of 1 per cent.

The farmer's task. From the details that have been presented with regard to the increase of the prices of farm products between farmer and consumer, the conclusion is inevitable that the consumer has no well-grounded complaint against the farmer for the prices that he pays. The farmer supplies the capital for production and takes the risk of his losses; his crops are at the mercy of drought, and flood, and heat, and frost, to say nothing of noxious insects and blighting diseases. He supplies hard, exacting, unremitting labor. A degree and range of information and intelligence are demanded by agriculture which are hardly equaled in any other occupation. Then there is the risk of over-production and disastrously low prices. From beginning to end the farmer must steer dexterously to escape perils to his profits and indeed to his capital on every hand. At last the products are started on their way to the consumer. The railroad, generally speaking, adds a percentage of increase to the farmer's prices that is not large. After delivery by the railroad the products are stored a short time, are measured into the various retail quantities, more or less small, and the dealers are rid of them as soon as possible. The dealers have risks that are practically small, except credit sales and such risks as grow out of their trying to do an amount of business which is small as compared with their number.

The problem for consumers. After consideration of the elements of the matter, it is plain that the farmer is not getting an exorbitant price for his products, and that the cost of distribution from the time of delivery at destination by the railroad to delivery to the consumer is the feature of the problem of high prices which must present itself to the consumer for treatment.

Why do not consumers buy directly from the farmers? A distribution of farm products in this simple way has already

begun in England, where coöperative organizations of farmers are selling by direct consignment to coöperative organizations of consumers in cities.

Farmers' coöperative-selling associations are numerous in this country, but coöperative-buying associations among the people of cities and towns are few. Aside from buying associations maintained by the farmers, hardly any exist in this country. It is apparent, therefore, that the consumer has much to do to work out his own salvation with regard to the prices that he pays. Potatoes were selling last spring in some places where there had been an overproduction for 20 cents and in some places for even 9 cents per bushel at the farm, while at the same time city consumers in the East were paying 50 to 75 cents per bushel, although there was nothing to prevent them from combining to buy a carload or more potatoes directly from the grower and for delivery directly to themselves.

AN UNSALABLE FOOD-SURPLUS

[The growth of city markets where all goods are handled by middlemen, and the buyer at retail is unacquainted with the conditions of production and little able to judge of quality, often brings about odd situations and what appear to be illogical prices. Many a daily paper will furnish an example; here is one from the New York *Times* of June 1, 1912. Such cases are popularly explained as due to "monopoly" trying to keep up prices by destroying the surplus. Cases of monopoly action similar to this occur, but are the conditions in this case "monopolistic"?]

While the cost of living is mounting steadily and beef is bringing civil war prices, tons of fresh food fish are being shipped daily from Fulton Market to Barren Island to be made into fertilizer. For the last three weeks a steamer, loaded with newly caught porgies, sea bass, butterfish, weakfish, and other varieties, has made one or more trips a day from the offal dock. On some days more than 200 barrels of fish in good condition have been destroyed—enough to supply 40,000 meals. On these days more fish have gone over to Barren Island than have been sold to the retail trade in New York City.

Wholesale dealers at the Fulton Market say they have to destroy the fish because in this city the people are afraid to buy it at low prices. Exceptionally large catches are reported all the way from Cape Henry, Va., to Seabright, N. J., a 300-mile stretch of coast. One Fulton Market dealer said yesterday that the supply of fish this year is 75 per cent. larger than the average season. Although nearly all of this fish is handled in New York Harbor, the consumer in New York City is benefited but little. One dealer estimated yesterday that not more than 2 per cent. of the fish received here is eaten in New York City. Other dealers placed the percentage a good

deal higher, but they agreed that, while fish is shipped from New York as far West as Chicago and St. Louis, and sold there cheaper and in greater quantities than usual, high prices prevail in this city, and the quantity sold here is about the same as in ordinary seasons.

One wholesale fish dealer yesterday gave an explanation of this.

"The chief reason that good eating fish has to be destroyed," he said, "is that dealers who place it on sale at low prices cannot sell it. The average woman doesn't know how to judge the condition of a fish, and her only test of its quality is the price. If it is lower than she is in the habit of paying she is afraid the fish is stale. She won't buy unless the dealer charges two or three times what would be a fair price. Her impression often is that, if the fish were really fit to eat, it would have been put into cold storage, instead of being sold cheap. This is a mistake, for cold storage is a costly process and we do not use it any more than is necessary. We can much better afford to sell fish outright at a lower price. At present we are paying 25 cents a barrel to have good fresh fish destroyed, but we lose less that way than we would by putting it into cold storage.

"Take bluefish, for example. It is considered a luxury and is much in request at present. For several years it had almost disappeared from these waters. Last year it returned, and this season it is being caught in unprecedented quantities. We sell it from 4 to 8 cents a pound. The retailer sells it all the way from 10 to 30 cents a pound. Those who sell it so low as 10 cents are the peddlers and small shopkeepers. While their fish is the same in every respect as the other, it is nevertheless under suspicion because of its cheapness. Very little of it goes at 10 cents a pound.

"Another factor is the belief of many people in this city that fresh fish can be obtained only on Friday. They think what is on the market any other day is stale or left over. As fish day only comes once a week the retailer has only one good

selling day in the week, and he has to make a larger profit, and he sells at an advance of from 300 to 500 per cent.

"We would rather sell at any figure than have it wasted. It costs something like 2 cents a pound to catch the fish we send over to Barren Island and it costs 25 cents a barrel to get rid of it in this manner. It would be cheaper to give it away. We cannot put it into cold storage because that would mean a greater loss. It costs three-quarters of a cent a pound to freeze fish and a quarter of a cent a pound for every month it is in cold storage. And only a limited supply of cold storage fish can be disposed of.

"Weakfish sells at wholesale from 2 to 5 cents a pound; at retail from 8 to 20 cents. Butterfish sells at wholesale from 1¼ cents a pound to 4 cents; at retail from 8 to 20 cents. The difference runs about the same between the wholesale and retail prices of other varieties. The country peddler buys fish at 5 cents a pound and sells it at 10 cents, while in this city the retailer, who buys at the same price, less the freight, sells at 20, 25, and 30 cents a pound. They prefer, even in exceptional seasons like this, to buy in small quantities and sell at high prices, and this policy is favored by the attitude of the consumers who suspect anything on sale at a lower price than they are accustomed to pay. This season a fish peddler could go about with the very best of fish and make a good profit offering it at 25 cents a panful, but, if he did, the consumers would be so alarmed that they would demand an investigation by the health authorities.

"The public is capricious in another respect. It has a taste for winter fish in summer and for summer fish in winter. When fish is in season, at its very best in condition and flavor and at its lowest price, the demand usually shifts for some other variety that probably is costlier and poorer in quality."

RENTALS OF URBAN REAL ESTATE

[The Principles of City Land Values, by Richard M. Hurd, president the Lawyers' Mortgage Insurance Co., New York, 1903, contains numerous illustrations, maps of cities, diagrams, and comparisons of values based on wide and painstaking study. The extracts which are printed in this book with the permission of the author, are from the latter part of book, and give the general conclusions (page 122).]

Basis of gross business rents. While gross rents are fixed by competition, the question arises, How do bidders determine what they can pay? The basis differs radically between business property which earns income for the occupant as well as the owner, and residence property which for the occupant consumes income [1] only.

The gross rents of business property are gaged from the economic standpoint, these being in the long run the normal proportion of what property can earn for the tenant. The proportion of gross receipts which a shopkeeper pays as rent varies according to his ability as a tradesman, the character and class of his business, and the location, a fair average being from 20 to 40 per cent. The better the location for retail trade, the higher the proportion of receipts paid for the rent. For retail trade the location and the consequent advertising perform the vital function of selling the goods, and the shopkeeper can largely devote his energies to selecting what the people want. Similarly, though in a less marked way, prominent office buildings help to advertise the business of their tenants. On the other hand, mercantile property not

[1] [Pecuniary income is here meant. Residence property occupied by a tenant earns pecuniary income for the owner, and yields to the tenant an income of uses which his money buys.—Ed.]

on traffic streets, wholesalers, etc., pay but a small proportion of their receipts as rent, the saving, however, going to the hire of drummers to sell goods.

The gross rents of residences. The gross rents of residences represent the proportion of income which various classes can afford to pay for house rent. While the return for such expenditure is chiefly the satisfaction of suitable surroundings, social ambition influences all classes to live in the best neighborhoods within their reach. The proportion of [house] rent to income varies from 15 or 20 per cent. among the wealthy, up to 25 or 35 per cent. among tenement dwellers.

Operating expenses. Taking as gross rents the amounts actually received and not the full rental value, from which an allowance for vacancies must be made, we may note first the great difference in the proportion of operating expenses according to the class of property, this varying from 10 per cent. for one- or two-story brick store buildings, up to 50 per cent. for office buildings or apartment houses. Explaining this difference is the fact that in office buildings and apartment houses, from 20 to 25 per cent. of the rent represents the payment for services, such as light, heat, elevator, janitors, cleaning, etc. If from gross rentals all service charges are deducted, the other charges, taxes, insurance, repairs and rent collecting, approximate in percentage quite closely in all classes of property.

Average taxes. Average taxes vary somewhat in different cities. Taxes on individual properties in the same city vary more sharply owing to irregular assessing by tax officials. Figuring the average of a large number of American cities, taxes range from 1¼ to 1½ per cent. of actual value, the chief exceptions being in Washington, where taxes amount to ⅗ per cent. (the United States Government paying half the taxes), and in San Francisco, where taxes amount to ⅘ per cent. (the city having no bonded debt). The chief errors of assessors come from their overestimate of external appearances

and from the habit of following former assessment rolls, so that quite uniformly property which has been valuable but which is deteriorating is assessed higher than property in the line of growth and yielding larger rents.

The cost of insurance. The cost of insurance is usually so slight that it can be disregarded in making up the budget of annual expenses. Rates range from 15 cents to 30 cents per $100 per annum for first-class risks in the larger cities, 50 cents to 75 cents per $100 on first-class risks in the smaller cities, $1.00 per $100 on stores and office buildings in the smaller cities, and so on up.

Repairs. Leases vary in their provisions as to payment for repairs by landlord and tenant, but if paid by the tenant the rent is proportionately reduced. Average repairs vary from one-half of 1 per cent. of the value of the building per annum in the case of the highest type of fireproof buildings, 1 per cent. for ordinary mercantile buildings, 2 per cent. for older property or that of cheaper construction, 3 to 4 per cent. for old tenements, and so on up in proportion to the age, character of construction, and lack of care of the buildings.

Cost of rent collecting. The cost of rent collecting averages from 2½ to 3 per cent. of the rent receipts in the larger cities, according to the class of property, and about 5 per cent. in the smaller cities, according to the class of property. Owners who are competent to manage real estate may save agents' commissions by so doing, but instances are not uncommon, especially as to large business property, where owners managing their own property lose their time and from 20 to 30 per cent. of the income which an expert rental agent could have obtained.

Operating expenses and net rents. An estimated scale of proportion of total operating expenses and net rents would be as follows, the cost of services where rendered, as in office buildings, apartments and some tenements, being included in expenses:

	Expenses, per cent.	Net rents, per cent.
Low retail or wholesale buildings	10–25	90–75
Residences	20–30	80–70
Non-elevator office buildings	25–35	75–65
Tenements, non-elevator and elevator	25–45	75–55
Elevator apartments	40–55	60–45
Fireproof office buildings	40–55	60–45

Expenses and net income. It is clear that the lower the cost of the building in proportion to the value of the land, the nearer the income approaches to pure ground rent, against which the sole charge is taxes. On the other hand, the more expensive the building the higher the maintenance cost, owing both to the greater number of services rendered and to the higher standard of accommodation. Since the operating expenses of a building, whether fully or only partly occupied, vary but slightly, the larger the proportion of expenses to gross rentals the more marked will be the rise or fall of net rentals as gross rentals fluctuate. Ordinarily, expensive office buildings are properly located, the chief errors being in the erection of expensive buildings in small cities, or in poor locations in larger cities. When hard times cause a sharp drop in rents in the smaller cities, instances have been known of the upper floors of such buildings not earning sufficient rent to pay for the mere services rendered, so that it would pay for owners to close the buildings above the ground floor, even though the ground floor stores are in active demand. The danger to owners of heavy fixed charges is shown in the following table [somewhat abbreviated]:

With percentage of expenses to gross income.	If gross rents rise or fall 20 per cent.	40 per cent.	60 per cent. then net rents rise or fall
10 per cent.	22 per cent.	44 per cent.	66 per cent.
20 " "	25 " "	50 " "	75 " "
30 " "	29 " "	56 " "	85 " "
40 " "	33 " "	66 " "	100 " "
50 " "	40 " "	80 " "	120 " "
60 " "	50 " "	100 " "	150 " "

Allowance for income from building. The next charge against gross rents is for interest on capital invested in the building, this being figured at the same rate as the capitalization of the ground rent, after an allowance for depreciation has been made.

[This charge of interest on capital invested can be looked upon only as estimate made at the moment of investment, in the belief that the form and style of building is being suitably chosen. After the building is done, the amount properly to be charged against gross rents on account of the building would have to be judged from other conditions than the amount invested, and the investment may be deemed to be either partly or wholly lost. This is strikingly brought out by the pictures and the accompanying explanation which appear in the text at this point.—Ed.].

Net ground rent. The final residuum constitutes the . . . ground rent which represents the competitive premium paid for location. Where there is no residuum of ground rent in city land it does not follow that the land has no value, but usually that the improvements are not suitable, so that the value must be estimated under a different utilization. If the improvement is a suitable one, absence of ground rent may be due to temporary drop in rentals or bad management, all city land normally yielding some ground rent.

Ground rents and various utilities [page 145]. In reviewing the evolution of value[1] in urban land, the first step is to conceive of the naked site apart from the buildings, having only the qualities of location and extension and without value until there is competition for land. . . . Exchange value consists of [the capitalization of the ground rent] modified by future prospects. Ground rent is the residuum after deducting from gross rents all operating charges, taxes, insurance, repairs, rent collecting, and interest on the capital invested in the building. Ground rent is a premium paid solely for loca-

[1] [In the following paragraphs the statements made regarding "value" are almost all true also of rental-value and of usance-value, although they are made in the text in relation to capital value.—Ed.]

tion and all rents are based on utility. Utilities in cities tend constantly toward specialization and complexity, business being broadly divided into distribution, administration and production, and then indefinitely subdivided; and residences being divided into as many classes as there are social grades. In so far as land is suitable for a single purpose only, its value is proportionate to the degree to which it serves that purpose and the amount which such utility can afford to pay for it. When land is suitable for a number of purposes, one utility competes against another and the land goes to the highest utilization. . . .

Different uses of land. The factors distributing values over the city's area by attraction or repulsing various utilities are, in the case of residences, absence of nuisances, good approach, favorable transportation facilities, moderate elevation and parks; in the case of retail shops, passing street traffic, with a tendency towards proximity to their customers' residences; in the case of retail wholesalers and light manufacturing, proximity to the retail stores which are their customers; in the case of heavy wholesaling or manufacturing, proximity to transportation; and in the case of public or semi-public buildings, for historical reasons, proximity to the old business center; the land that is finally left being filled in with mingled cheap utilities, parasites of the stronger utilities, which give a low earning power to land otherwise valueless.

Proximity and accessibility. Value by proximity responds to central growth, diminishing in proportion to distance from various centers, while value from accessibility responds to axial growth, diminishing in proportion to absence of transportation facilities. Change occurs not only at the circumference but throughout the whole area of a city, outward growth being due both to pressure from the center and to aggregation at the edges. All buildings within a city react upon each other, superior and inferior utilities displacing each other in turn. Whatever the size or shape of a city

and however great the complexity of its utilities, the order of dependence of one upon another is based on simple principles, all residences seeking attractive surroundings and all business seeking its customers.

HOUSING AND RENTS IN AMERICAN TOWNS

[The British Board of Trade Report on working-class rents, etc., in the principal industrial towns of the United States (made in April, 1911), presents a comparison by means of index numbers, of average rents for working-class houses and apartments in the various towns investigated. The dwellings are classed merely by the number of rooms (the mean between the lowest and highest rates that predominate being determined); and thus the comparison between large and small cities leaves out of account differences in yards and gardens, in height of building, etc. A four-room apartment on the fifth floor, without a foot of yard enters into the estimate just as does a separate one-story, four-room cottage with a yard. The difficulties are recognized in the report, where they are deemed unavoidable. The method of computing the averages, by a somewhat elaborate process, having been explained, the report says (p. xxv. ff.):]

In the following table the index numbers so calculated are given, showing the relative level of rents in each of the towns investigated as compared with New York, the predominant rents in that town being taken as the base (= 100):

RENTS INDEX NUMBERS IN DESCENDING ORDER.
NEW YORK = 100.

Town.	Index number.	Town.	Index number.
Borough of Manhattan (New York)	109	New Orleans	72
St. Louis	101	Savannah	71
NEW YORK	100	Louisville	71
Pittsburg	94	Chicago	70
Memphis	93	Milwaukee	66
Cincinnati	93	Lawrence	64
Borough of Brooklyn (New York)	88	Cleveland	64
Brockton	83	Paterson	62
Boston	82	Providence	59
Birmingham	81	Augusta	58
Philadelphia	79	Detroit	57
Newark	78	Fall River	55
Minneapolis—St. Paul	77	Baltimore	54
Atlanta	76	Lowell	52
		Muncie	44

It will be observed from the above table that, while the index number for St. Louis is slightly higher than that for New York as a whole, the figure for the great borough of Manhattan, still often regarded as New York proper and still the center of the most congested areas in the world, is 109, while that for the borough of Brooklyn is 88. Apart from St. Louis, Pittsburg (a rapidly growing industrial center), Memphis (a city hardly less Western than Southern in temper and stage of development), and Cincinnati (still somewhat hampered in the development of its housing accommodation by physical conditions), also stand out as towns in which the range of rentals is relatively high. Brockton, the highest among the New England towns, is the center of a staple industry in which wages and the standard of comfort are not only generally high but more approximately uniform than in most towns. Baltimore and Detroit, with index numbers respectively 46 and 43 per cent., lower than that for New York, are the most important towns included among the more cheaply rented, although the position of Cleveland, Milwaukee and Chicago is not far removed, with index numbers of 64, 66 and 70 respectively. Between New York and Detroit, which ranks as one of the "home cities" of America, Philadelphia, which is best known by this title, occupies a middle position with an index number of 79.

Although wide differences are thus shown in rents as between town and town, the local variations, apart from the unique position occupied by New York itself, are much less marked when these are grouped geographically, as the following table shows:

RENTS INDEX NUMBERS FOR GEOGRAPHICAL GROUPS.
NEW YORK = 100.

Geographical group.	Number of towns in group.	Mean rents. Index numbers.
NEW YORK	1	100
New England towns	6	66
Other Eastern towns	4	68
Central towns	6	71
Middle West towns	4	79
Southern towns	6	75

The lowest index number is that for the New England group, 66, a figure to which that for the other Eastern towns closely approximates. The six Central towns include Muncie, a small town in which industrial conditions, largely owing to the closing of steel-rolling mills, had been recently depressed and in which rents in 1909 were exceptionally low in consequence. Omitting Muncie, the index number of the Central group is 76, or nearly as high as that for the Middle West, the towns in which, with a mean index number of 79, stand out as the most highly rented geographical group of all. The Southern group includes Memphis, a town that is largely dominated by the Western spirit and where rents are high. It differs in tone and character from the other five towns in this group and, excluding Memphis, the mean index number for dwellings in the occupation of whites for the remaining five Southern towns is 72, a figure which still seems a relatively high one for a part of the country in which the temperature is never low and in which shelter is perhaps equally important as a protection from heat as from cold. In these towns, however, homes are generally self-contained and sites relatively liberal, and there is practically no congestion, while the towns themselves are largely representative of the new industrial South.

In spite of the complex and often local causes that help to determine rent levels, when the towns are grouped on the basis of population a general conformity with the rule that the rents of large towns tend to be higher than those of smaller ones is shown, and in this respect the position is illustrated in the following table:

RENTS INDEX NUMBERS FOR POPULATION GROUPS.
NEW YORK = 100.

Population group.	Number of towns in group.	Mean rents. Index number.
NEW YORK (population 4,766,883).....	1	100
Other towns with more than 500,000 inhabitants	8	78
Towns with from 250,000 to 500,000 inhabitants	5	73
Towns with from 100,000 to 250,000 inhabitants	8	69
Towns with under 100,000 inhabitants.....	5	64

. . . The Census of 1900 gives particulars of the number of dwelling-houses owned by their occupiers either free or encumbered, and the combined percentages ranged at that date, so far as the towns covered by the inquiries are concerned, from a maximum of 39.1 in Detroit to a minimum of 12.1 in New York. In six cases the percentages exceeded 30, namely in Detroit, as mentioned, with 39.1 per cent., 16.6 per cent. being encumbered; Cleveland with 37.4 per cent., 16.1 per cent. being encumbered; Milwaukee with 35.9 per cent., 19.4 per cent. being encumbered; Duluth with 35.7 per cent., 11.5 per cent. being encumbered; Brockton with 33.9 per cent., 23.1 per cent. being encumbered; and Muncie with 32.7 per cent., 14.8 per cent. being encumbered. In fourteen of the towns investigated the numbers of dwelling-houses owned by their occupiers, both free and encumbered, exceeded 20 per cent. and were under 30 per cent.; in eight towns, including five of the six Southern towns with large proportions of their population colored, the combined percentage fell below 20; the remaining three towns being Boston with 18.9 per cent., Fall River with 18.0 per cent., and New York, as mentioned, with 12.1 per cent. It must be observed that the above percentages refer to dwelling-houses of every kind irrespective of the class of occupier, and that it is impossible, therefore, to state to what extent the owners belonged to the wage-earning class. The chief methods by which purchases are arranged are either through the medium of building and loan associations or through the special facilities offered by builders and real estate companies. Building and loan associations are widely scattered throughout the country, and are especially numerous in Philadelphia, but the competing activities of builders and companies, with many variations on the general plan of a percentage payment of the price in cash with first and sometimes second mortgages and sometimes on a simple plan of payment by monthly instalments, are still more general. As a rule ownership includes the freehold, but in Baltimore the buildings are frequently held alone, the ground rent

being a separate and permanent charge. To a less extent a similar practice prevails in Fall River.

As regards foreigners, among those who appear to be the most active buyers of real estate are the Germans, Italians, and Jews, but also the Poles in towns such as Detroit and Milwaukee, the Bohemians in Chicago, and the Scandinavians in Duluth and Minneapolis–St. Paul. The great effort made to become house-owners is frequently mentioned in the town reports, a special impulse to incur a present sacrifice being doubtless often found in the confidence with which a future rise in the value of land is anticipated. When a customary local type of building is for the accommodation of more than a single family, the dwelling is still often purchased by small owners and one or more tenements, as the case may be, are then sublet. This would be the usual and, indeed, under local conditions, the almost necessary practice in such towns as New York and even Boston, but subletting part of what is designed for the accommodation of a single family, or the introduction of a disproportionate number of lodgers and boarders, is also apt to follow on purchase, as among the Poles in Milwaukee. In general it may be observed that the practice of purchasing dwellings by wage-earners in the United States has assumed large proportions; that it is regarded as a satisfactory feature of the urban situation; and that, in spite of the large transient element of the population, it is apparently increasing.

[In the comments made on conditions found, some interesting problems of house rents are suggested, page xxi:]

The normal difficulties of standardizing dwelling accommodation in the United States are increased by the special importance that attaches there to what is understood by "location," a quality that every town both in the Old and the New World exhibits in some measure, but one which assumes a distinctive character when segregation is apt to follow not only the more usual broad distinctions of class and income but also minor subdivisions due to race and color. In general, how-

ever, the rental differences due to these forms of segregation are less marked than the differences due to the character and general advantageousness of the dwellings themselves.

The most conspicuous illustration of this is found in the housing conditions of the negroes who, although as a class they generally have to pay somewhat more than the white man for identical accommodation, are found frequently paying a lower range of rent, not because the individual houses occupied by them are more moderately rented and really cheaper, but rather because those which they are able to secure rank often amongst the older, and, more uniformly, among the less desirable properties. Such conditions are illustrated, for instance, in Baltimore or Savannah. When, as in New York City, much the same class of dwellings are in colored as in white occupation, a somewhat higher level of rent is generally paid by the former class of tenant, even in recognized colored districts and always in districts which are still predominantly white. . . .

[Page xxiv] As regards housing accommodation in general, there is much evidence of an activity of competition among owners and builders and of a degree of material prosperity that are tending very widely to raise its standard. Thus, although the areas of deterioration and congestion frequently found and the occasional rapidity with which the character alike of the buildings and of districts is apt to change for the worse in the racial kaleidoscope of American towns, militate against improvement, the general standard is being distinctly raised. Powerful influences to this end are found in the increasing facilities for transit, including nearly everywhere electric tramway systems, and in some cases in the construction of bridges and tunnels by which physical barriers of the past are being still further overcome. Of the power of these influences New York is itself perhaps at once the most important and the most striking example. But a more fundamental explanation of this improvement is found in the higher standard of demand that follows from an increas-

ing prosperity. The demand for improved housing itself is, indeed, a natural accompaniment of similar changes that are taking place as regards, for instance, amusements, clothing and food, in all of which a great variety appears to be resulting from a vast and an increasing effective demand. In other directions analogous changes are manifest, and just as mansions are becoming more splendid and middle-class homes more replete with comfort, so cottages and smaller homes are becoming more attractive and more convenient. Congested areas of crowded dwellings are, it is true, manifest and glaring exceptions to this rule, while the not infrequent practice of building more flimsily and the large number of dwellings still being erected for three or more families are opposed to it; but the general tendency, especially as regards the dwellings in the occupation of the more skilled workmen, is nevertheless towards a marked improvement.

THE FARMER'S WOODLOT

[THE conditions of the wood supply in America have been rapidly changing. An interesting illustration of the manner in which this change is related to prices, and the way it is affecting the use of land for timber (which is coming to be looked upon as a growing crop instead of an incumbrance on the land), is found in a portion of "An Agricultural Survey," by G. F. Warren, and others, Bulletin 295, of the N. Y. State College of Agriculture, 1909, p. 464, ff.]

Development of the woodlot. A little over a hundred years ago Tompkins County was covered with a dense stand of excellent virgin timber. This consisted of white pine, oaks, hemlock, maples, beech, elm, basswood and many other species. In the early days there was little market for lumber and in the haste to get the land cleared for farm purposes much of the finest timber was burned. It is estimated by men whose fathers settled the county that fully 60 per cent. of the virgin forest was cut and burned in order to clear the land. Unfortunately, neither the early or later clearing had much reference to the character of the soil. Woodlots are still common on some of the level rich land; and poor barren hillsides that are too steep for tilled crops or even for good pastures were cleared. There seemed to be no plan or system in clearing land. Whether a field was cleared or not seems to have been a matter of chance rather than a result of judgment.

Prices of lumber. The "log-run" prices of timber for a number of years show how rapidly the price that the lumberman gets for timber has increased. Not only have the prices increased but many kinds of lumber that once had no value now sell at fair prices. The figures in Table 68 give the average prices obtained by examination of the books of some

of the oldest lumbermen. They are for the lumber just as it comes from the saw-mill, or "log-run" prices.

TABLE 68. AVERAGE "LOG-RUN" PRICES OF TIMBER. TAKEN FROM LUMBERMEN'S BOOKS.

	1843.	1850.	1860.	1870.	1880.	1890.	1900.	1908.
White pine..	$6 00	$ 8 00	$12 00	$16 66	$21 33	$24 00	$28 00	$35 00
Hemlock ...	....	4 00	4 66	6 33	7 00	9 33	12 33	18 66
White oak..	....	6 00	7 50	14 00	15 33	16 00	18 66	26 66
Red oak....	....	10 00	12 00	13 33	14 50	15 33	18 33	22 50
Hickory	....	18 00	20 00	20 00	22 50	22 00	26 00	27 33
White ash...	....	12 00	12 50	16 00	19 00	19 00	20 33	26 00
Cherry	....	7 00	12 50	18 50	19 50	24 00	26 50	35 00
Basswood ...	....	6 00	8 00	9 00	11 00	12 66	15 66	20 66
Hard maple.	....	.....	6 50	8 00	10 50	12 00	14 33	19 00
Chestnut ...	....	.....	7 00	8 00	10 66	14 66	17 66	21 33
Elm	....	.....	9 00	12 00	14 00	15 00	19 50	20 50
Birch	....	.....	8 00	10 00	14 00	14 50	17 50	21 50
Beech	....	.....	.....	.....	5 00	7 00	11 00	15 00
Chestnut railroad ties..	....	.....	.....	.....	.....	28-42c.	28-45c.	30-50c.
Oak railroad ties	....	.....	.....	50	50	42-58	45-60	50-75
Soft cordwood	....	.....	.....	.....	.....	.....	1 50	2 00
Hard cordwood	....	.....	.....	3 00	3 25	4 00	4 50	4 00

Present condition of the woodlots. The present conditions of the farm woodlots in Tompkins County are representative of the conditions of the woodlots in many other counties in New York State. They might well be described as irregular, detached pieces of woodland, consisting of all sizes and ages of mixed deciduous and coniferous species, of first, second, and stump growths. They occupy no definite position as regards soil or altitude. Steep hillsides and ravines are denuded of their forest covers, in certain sections, and in other sections more or less thrifty woodlots occupy good agricultural land. They have no definite relation to the general lay-out of the farms. They are composed of dead, diseased, young, mature and weed trees all thrown in together. The valuable are left to struggle for supremacy with the useless but hardy species, and in addition are frequently required to withstand the ravages of stock. The fact that useful woodlots persist in spite of

these conditions is evidence of the excellent adaptation of this region to the growth of trees.

It is a deplorable yet self-evident fact that only a few of the farmers in Tompkins County have done anything toward improving their woodlots. When a piece of land is cut over, little attention is given to saving the young growth. Probably one-third of the woodlots of the county are being pastured. Such land is rarely worth much as a pasture, and the stock greatly injure the woods.

The woodlots are worth saving. Farmers are usually not aware of the value of their woodlots. Estimation of the value of standing timber is not easy for an experienced lumberman. Many farmers seem to have no idea of the value of timber. The following are a few examples taken from lumbermen's books:

EXAMPLE I.

A farm of 122 acres, 80 acres of which was woodland consisting of mixed hard and soft wood timber: oak, basswood, hemlock, maple, cherry, beech, ash, birch, elm.

Proceeds from lumber sales:

500,000 ft. mixed lumber at $20.00 per M.....	$10,000
500 cds. slab wood at 50c.....	250
Resold farm with top wood.....	700
Total sales.....	$10,950
Cost of cutting and marketing.....	4,250
Net sales.....	$6,700
Price paid for farm.....	1,750
Profit	$4,950

EXAMPLE II.

A farm of 50 acres, 35 of which was of mixed hardwood.

Total sales, lumber and lot resold.....	$5,094
Cost of cutting and marketing.....	1,500
Net sales.....	$3,594
Price paid for farm.....	500
Profit	$3,094

EXAMPLE III.

A lot consisting of 16 acres of mixed hardwood.

Proceeds from lumber sales	$2,194
Cost of cutting and marketing	900
Net sales	$1,294
Price paid for lot	500
Profit	$794

Cost of putting lumber on the market. The cost of putting lumber on the market is quite variable, depending on the kind of lumber and the distance that it must be hauled. The price is constantly rising as wages advance. An average of $10 per thousand board feet is perhaps a fair estimate for a farmer to make.

Most of the timber cut in Tompkins County is sawed by portable sawmills. The lumber then has to be hauled to market. The distance to market varies greatly, but ordinarily it is two to six miles. The estimated cost of cutting the timber, sawing and delivering to market is as follows:

Cutting (logs) per thousand feet	$ 75
Skidding to mill per thousand feet	2 00
Sawing per thousand feet	3 00
Sticking (piling lumber) per thousand feet	40
Delivering to market per thousand feet	2 00
Estimated overrun per thousand feet	35
Total expense per M. board feet	$8 50

The woodlot now a profitable farm crop. As an example, a farm on the hill lands of southern Tompkins County consists of 100 acres, 30 acres of which is in timber. This woodlot was cut in 1907 for the third time in 90 years. Each time it has been cut with entire disregard for the future. The third cutting on the 30 acres sold for $2,100, standing. In spite of the present high price of lumber, no attention was given to the future in this cutting. Young trees that were scarcely worth cutting, but that would be valuable in 10 to 20 years, were cut. Those that were too small to cut were broken down.

This is the almost universal practice, in spite of the profits that come from such a woodlot.

After "skinning" the woodlot, the entire farm of 100 acres, with buildings, was sold for $1,400. This farm would not rent for $1 per acre, as indicated by the selling price. But, in spite of the owners, it has grown $70 worth of wood per acre since the last cutting 30 years ago. If the $1 per acre rent were placed at compound interest at 5 per cent., it would not amount to $70 at the end of 30 years. In other words, the wood land pays better than the farm land. If the wood land were given a very little attention in cutting, so as to maintain a stand of the best kinds of trees, the returns could probably be doubled.

As another example, a lot consisting of 35 acres composed of mixed hardwood was cut and the net proceeds from the timber sales amounted to $4,938. Men who knew the history of this woodlot asserted that 75 per cent. of the wood had grown in the past 22 years. That is, the lot was cut over 22 years ago and the greater part removed. According to these estimates, $3,704 of timber grew on the 35 acres in 22 years. This is $106 per acre or $4.82 per acre per year. This land would not sell for over $15 per acre.

These examples are fairly typical of southern New York woodlots. Neither of them received any care. If the diseased trees and weed trees had been cut and the woodlot looked after as a farm crop, the income would have been much greater.

These profits are based on what is made when lumber is sold, but the chief use of a woodlot is to supply posts and lumber for farm purposes. If lumber and posts have to be purchased, they usually cost much more than is received for those that are sold. So that the profits will be much greater than those given above.

Suggestions on the care of woodlots. The first thing to consider in the management of a woodlot is to decide where one is wanted. There are some areas of land now in woodlots that are so rich and valuable that it may be best to cut the

wood and use the land for pasture and later clear it. On other farms there is cleared land that is of little value and that had best be set to trees. On still other farms the woodlot is already in the right place. If it has been decided that a woodlot is desired in a certain place, this area should be devoted to woods. It should not be pastured. If it is needed for pasture it will pay better to devote half of it to pasture and half to woods. The pasture part will then be gradually cleared, leaving only enough trees for shade. Half the area devoted entirely to woods will probably grow as much wood as the entire area will if pastured. It is poor economy to try to grow trees and grass on the same land.

After the area to be devoted to woods has been determined, the woods should be looked on as a regular farm crop. The dead trees, the ill shaped trees, and the undesirable kinds should be cut. The open spaces should be planted with good kinds of trees. Nearly all of this work can be done in winter or at other times when little or no work would otherwise be done. The planting can be done very rapidly and at small cost.

White pine, chestnut, and black locust are the most desirable trees to plant. White pine will grow well in most of southern New York. Chestnut is particularly adapted to the poor soils. Black locust is good for posts. It is sometimes attacked by borers. It may not be quite so good for the poorer land as chestnut. The State encourages this planting by furnishing trees at cost. Directions for planting are sent with the trees. For these trees address the State Forester, Albany, N. Y.

When the woodlot is cut the young trees should be saved so far as possible, and those that are not of fair size should be left for future years.

HAULING FROM FARMS TO SHIPPING POINTS

[An example of the economic problem of place-value is found in the location of farms relative to the shipping points on railroads or on navigable waters. The Bureau of Statistics of the U. S. Department of Agriculture, in Bulletin 49, issued in 1907, published the results of an inquiry in which replies were received from correspondents in nearly two thousand counties. Most of the explanation of the methods used in the calculations, and most of the detailed tables may be omitted, but the following extracts give the main results of the inquiry.]

Rates of hiring and actual costs. The price for hiring a team, wagon, and driver for one day in a given community is taken, in this investigation, as the cost of hauling in that community—the cost to the farmer to perform that service for himself. It is known that farmers in the United States usually do their own hauling, and in many parts of the country the practice prevails of exchanging services, so that a number of men may on one day haul enough of one man's produce to load a railway freight car, and on another day they perform the same service for a second member of the group, continuing this until all members have been helped; but, as a general fact, it is rare that a farmer hires his produce hauled to a shipping point or local market, and in many communities the practice is unknown.

In a few parts of the wheat regions of the Mississippi Valley farmers hire their grain hauled at certain rates per bushel; and professional "freighters" are important aids to the farmers and grazers between the eastern slope of the Rocky Mountains and the Pacific coast. This region is one of great distances, and it does not pay all of the producers to keep enough horses, wagons, and drivers to move their

wool, cotton, or other surplus over the long distances of 50, 75, 100, and even 150 miles from the ranch to the "local" shipping point or market. The "freighter" will take the produce for a moderate charge, and on his return trip will bring merchants' goods and farm supplies from the distant railroad station.

Conditions affecting actual cost. Hauling in most cases may be regarded as a secondary employment for the horses, wagons, and drivers of the farm, the chief duties of the men with their teams being on farms themselves. . . . But the price paid for hiring may be regarded, generally, as subject to competition and, hence, tending to equal a sum which will just cover the actual cost of performing the service and allow a fair profit in addition. The actual cost to a farmer of performing the service of hauling for himself may in certain instances be less than the cost of hiring, and in other cases it may be more. The hauling may be done when no other farm work is pressing and when teams and wagons would have no other employment. One-half the cost of hauling may be saved when it is practicable to take full loads on the return trips. Sometimes farmers haul produce to market and return with loads of fertilizer, coal, or other goods. These back loads, however, may be regarded as rather exceptional, and their influence upon the average cost per load of produce hauled from the farm, as computed in the following tables, is not known to be important.

On the other hand the farmer's expense of hauling may be increased on account of bad roads; he may be compelled to deliver his product at the local shipping point when prices are low or wait for a better market and run the risk of having to haul over rough roads with more horses to the wagon and a much lighter load. Some persons prefer to sell at a lower price than to wait for a better market and incur the expense of hauling under difficulties which may amount to double or even four times the normal cost.

Taking into consideration the low and the high costs of

hauling, it does not appear that the average cost is not about the usual price for hiring in that community. . . .

Values of products and costs of hauling. The average costs per 100 pounds for hauling products from farms to shipping points vary in a number of instances roughly with the relative values of the articles hauled, the more valuable product being hauled often at greater cost than the less valuable product. Corn, wheat, oats, hay, and potatoes were

TABLE 1.—AVERAGE COSTS OF HAULING PRODUCTS FROM FARMS TO SHIPPING POINTS: TOTALS FOR STATES REPRESENTED.

Product hauled.	Number of counties reporting.	Average—					
		Miles to shipping point.	Days for round trip.	Pounds in one load.	Cost per load.	Cost per 100 pounds.	Cost per ton per mile.
Apples	114	9.6	0.9	2,300	$2.79	$0.12	$0.25
Barley	226	8.8	.7	3,970	2.67	.07	.16
Beans	22	9.0	.8	3,172	2.75	.09	.20
Buckwheat	8	8.2	.8	2,438	2.90	.11	.27
Corn	981	7.4	.6	2,696	1.78	.07	.19
Cotton	555	11.8	1.0	1,702	2.76	.16	.27
Cottonseed	110	10.7	.9	1,654	2.42	.15	.28
Flaxseed	51	10.4	.7	3,409	2.70	.08	.15
Fruit (other than apples)	99	11.6	1.1	2,181	3.53	.16	.28
Hay	761	8.3	.7	2,786	2.32	.08	.19
Hemp *a*	7	5.2	.7	3,393	2.10	.06	.23
Hogs (live)	316	7.9	.7	*b* 1,941	2.00	*b*.10	*b*.25
Hops	14	11.7	1.0	3,665	3.89	.11	.19
Oats	798	7.3	.6	2,772	1.82	.07	.19
Peanuts	19	8.1	.6	1,363	1.67	.12	.30
Potatoes	569	8.2	.7	2,679	2.34	.09	.22
Rice	18	7.5	.8	2,407	2.70	.11	.29
Rye	78	8.4	.7	2,625	2.23	.08	.19
Timothy seed *c*	5	8.0	.8	2,410	1.92	.08	.20
Tobacco	113	9.8	.8	2,248	2.28	.10	.20
Vegetables (other than potatoes)	152	9.8	.9	1,852	2.84	.15	.31
Wheat	1,051	9.4	.8	3,323	2.86	.09	.19
Wool	41	39.8	5.6	4,869	21.39	.44	.22

a Kentucky only. *b* Average for six States only. *c* Iowa only.

hauled at costs ranging from 7 to 9 cents per 100 pounds, cotton 16 cents, and wool 44 cents per 100 pounds. Tobacco and hogs, however, cost only 10 cents per 100 pounds to be hauled from farms. The difference in cost of hauling between one product and another is largely due to the relative distance traversed and the relative size of load taken. It

will pay to produce cotton farther away from local shipping points than grain, and 150 miles is not too far to haul wool from ranches to railroad stations. Hogs being produced generally where grain is also a surplus crop, the prevailing distances and methods of hauling for the cheaper products would affect the cost of hauling the higher-priced commodity.

Hauling cotton and wool. [Of the detailed comment (Bulletin, pages 14–34) upon the various crops in the different States, only a part regarding cotton and wool is here given.] . . . As in the case of nearly all other farm products, cotton is generally hauled to local shipping points by the farmers themselves, and hiring such work done is the exception. Owing to its high value, cotton may be transported profitably in much smaller loads and for longer distances than a less valuable article, as grain or hay. It is noted that the average load of cotton weighs about one-half as much as the average load of wheat in the United States, but a load of cotton, at prices prevailing in October, 1906, was worth more than four average loads of wheat.

For the United States the average cost of hauling cotton from farms to shipping points is about 80 cents per bale, and the average load is a fraction more than three bales. One-horse carts and wagons and ox carts are found more serviceable in hauling the main crops in the cotton region than in the grain country, and their use helps to account for the small average loads. It is of interest to see that one of the smallest average loads of cotton for any State or Territory is in Florida, where about one-half the crop consists of Sea Island cotton, a variety much more valuable than the rest of the cotton produced in the United States. . . .

The average cost of hauling wool to shipping points is high on account of the great distances traversed, the average for the United States being 39.8 miles, and the distance in at least one county whose returns enter into the averages was 150 miles. Hauling over these long routes is usually done by freight wagons, owned and driven by persons other than

the producers of the wool, and the rates actually paid for hauling are used in these instances as the cost of wagon transportation from farm or ranch to shipping point. The large number of actual rates paid entering into the average cost of hauling wool in the United States makes this figure (44 cents per 100 pounds) appear to be one of the most accurate of the average costs determined.

The value of an average load of wool ranges from $500 to $900 and allows for a high cost to get it to the shipping point, and even the cost of 71 cents per 100 pounds for the county reported in Arizona and the five counties in Oregon is not too large in proportion to the value of the load. . . .

The farmers' longest hauls. The conditions of hauling from farms over the longest routes reported for each product are given in Tables 23 to 40.[1] While there may be longer hauls for farming communities in the United States in the cases of some or all the crops mentioned in these tables, the instances as reported here serve to illustrate extreme costs of wagon transportation. It is not to be supposed that all or any considerable number of these great costs of hauling permit the products in question to be sold profitably at prices which would prevail in a large commercial center.

Potatoes hauled 70 miles over Colorado roads at a cost of 84 cents per bushel, as given in Table 23, could be sold only at some local market where prices were far above those in most parts of the United States; and the corn, rye, and vegetables carried over the Georgia mountains from the extreme northern part of the State down to Gainesville, a distance of some 60 miles, do not represent a considerable portion of the general supply of those products in Georgia, and their extensive production under such great costs of delivery is out of question.

By taking on the same load with grain or vegetables a considerable amount of poultry, eggs, and butter, a farmer can

[1] [Only Table 23 is here reproduced, in which is indicated the one longest haul reported for each of the crops mentioned.—Ed.]

make his long trip to town pay, so that the total cost of hauling the load falls but slightly upon the less valuable part of it. A half-ton load of produce taken from farm to local market or shipping point at a cost of $16 might easily contain, in addition to several bushels of grain or potatoes, enough poultry, butter, and eggs to make the total value of the load from $30 to $50.

TABLE 23.—COSTS OF HAULING PRODUCTS IN THE UNITED STATES FROM MOST REMOTE FARMS TO SHIPPING POINTS, AS REPORTED.

Product hauled.	State or Territory reporting most remote farms.	Miles to shipping point.	Days for round trip.	Pounds in one load.	Cost per load.	Cost per 100 pounds.
Apples	Arkansas	50.0	4.5	2,000	$12.38	$0.62
Barley	New Mexico	57.5	4.0	2,000	22.00	1.10
Corn	Georgia	60.0	8.0	1,000	16.00	1.60
Cotton	Texas	110.0	8.0	3,000	24.00	.80
Cottonseed	Alabama	50.0	3.0	1,000	7.50	.75
Flaxseed	South Dakota.	50.0	2.5	2,500	15.00	.60
Fruit (other than apples)	Utah	52.5	4.5	3,000	13.50	.45
Hay	New Mexico	80.0	5.0	2,000	15.00	.75
Hogs (live)	Texas	31.5	3.0	(a)	7.50	(a)
Oats	Utah	100.0	14.0	7,000	35.00	.50
Potatoes	Colorado	70.0	7.0	2,500	35.00	1.40
Rice	Louisiana	22.5	2.0	2,000	8.00	.40
Rye	Georgia	60.0	8.0	1,000	16.00	1.60
Tobacco	North Carolina	50.0	4.0	1,600	8.00	.50
Vegetables (other than potatoes)	Georgia	60.0	8.0	1,000	16.00	1.60
Wheat	Utah	100.0	14.0	7,000	35.00	.50
Wool	Oregon	165.0	24.5	7,000	61.25	.88

a Not reported.

Methods of hauling. In the North Central States much of the grain hauled from farms is taken in bulk, and the size of load is determined by the capacity of the wagon box. Additional sides and end pieces are put on when it is desired to haul larger loads, especially when such a light grain as oats is taken. When a farmer intends to load a car with grain, and it is necessary to haul from ten to twenty wagonloads within a day or so, he often will be helped by a number of neighbors. He in turn will aid them when they haul.

It is a common practice to haul wheat and other small grain direct from thrasher to car. The grain is loaded as rapidly as thrashed and each wagon in turn is driven to the shipping point, where a wagon dump is often used for unloading the grain. This dump is a platform, on which a loaded wagon is driven, the end gate of the wagon box removed, and the parts of the platform upon which the hind wheels of the wagon rest are lowered so that the grain falls into a space below. It may be received into a bin under the platform for temporary storage, or may be conveyed immediately by mechanical means to cars or up to bins in an elevator.

Corn also, in some places, is handled in a similar way, the wagons receiving their loads from the machine on the farm as the corn is being shelled.

The use of large wagons with broad tires and teams of four, five, and six horses enables farmers of certain parts of the United States, notably in the hill country of Maryland and the adjoining counties in Pennsylvania, to carry their products to shipping points and local markets in loads of two or more tons each. Since one of these large wagons holds at least twice as much as an average two-horse wagon, one driver performs with the larger outfit twice as much service as he can with the smaller one. Where wages are high the economy in the use of the four-horse wagon is considerable. . . .

The general use in the far West of regular freight wagons owned and driven by persons other than the owner of the products carried has already been mentioned. . . . In order that one driver may take charge of a large amount of freight, two or more wagons are often coupled together and the entire train is drawn by a number of horses, mules, or ponies. The loads taken by a freight wagon, with its trailers, are said to weigh at times as much as seven tons, and as many as twelve or fourteen horses are sometimes used in one team. Since the freight wagon carries goods also on its return trip,

its earnings do not depend solely upon hauling farm products. . . .

Total costs of hauling done in 1905–6. The quantity of all farm products hauled to shipping points in the United States in a given time is not to be obtained with much accuracy from present sources of information, but for twelve crops the quantity hauled from farms may be estimated approximately. . . . The total weight of twelve products hauled from farms . . . is about 43,000,000 tons, and the total cost of hauling this amount was $73,000,000. The average cost per ton was $1.80.

The weight of wheat and corn hauled from farms in 1905–6 was 31,000,000 tons, while cotton and nine other surplus products weighed altogether only 12,000,000 tons. The heaviest crop, and the one costing most to haul to shipping points, was corn, and next in order was wheat. The barley crop, less an allowance for seed retained, was heavier than the cotton crop, but cost about one-half as much to haul to shipping points.

The relatively low price of corn made it cost 9.6 cents to market a dollar's worth of this grain, while a dollar's worth of wheat was taken to shipping points for 7.2 cents, a dollar's worth of cotton for 1.4 cents, and a dollar's worth of tobacco was hauled for as little as 1.2 cents.

The high rate per 100 pounds (44 cents) for hauling wool amounted to only 2.7 per cent. of the value of the article as given in the Twelfth Census. The average cost of hauling from farms to shipping points for the twelve articles mentioned was 5.2 per cent of their value. . . .

As this bulletin treats only of hauling from farms to shipping points, the quantity of wheat hauled to local mills for grinding is not included in the total of 24,246,000,000 pounds as given. The entire wheat crop of 1905 amounted to 692,979,489 bushels. Allowing 1½ bushels per acre for seed, the quantity used on the 47,305,829 acres sown in the fall of 1905 and spring of 1906 would equal 71,000,000 bushels. This amount together with the quantity shipped out of county

where grown being subtracted from the total crop, there remains about 6,500,000 tons of wheat, which may be taken as approximately the quantity hauled from farms for the use of local mills. With this home-ground wheat added to the total weight of traffic as given above, the sum would be over 49,000,000 tons. And the cost of hauling this wheat to local mills, if computed at the same rate as the cost of hauling to shipping points, would amount to $11,700,000. This, added to the total cost of hauling to shipping points as given above, would equal $33,521,000 for wheat and $84,684,000 for all crops mentioned.

Value of better facilities. The cost of wagon transportation would be lowered if the size of load were increased, or the time of round trip shortened, or if both these changes were effected; and either of them could be brought about in many communities by improving certain roads. The cost of hauling should be considered in connection with expenditures for building and improving roads. The size of loads might be increased, without a proportional increase in cost of hauling per 100 pounds, by using larger wagons with more horses or by driving heavier and stronger horses or mules; and the cost of hauling might be further reduced by quickened methods of loading and unloading.

Improvements which would reduce the cost of hauling by one-tenth would effect a saving of $7,000,000 in hauling from farms to shipping points in the United States the products and quantities mentioned, and $1,000,000 more would be saved in the cost of hauling wheat for the use of local mills, to say nothing of the amounts saved in hauling the unknown surplus of the crops not mentioned in this table, such as hay, potatoes, rye, buckwheat, fruit, vegetables, sugar cane, and sugar beets. If it costs a farmer 5 cents per bushel to haul his wheat to the shipping point when he requires one day to make a round trip, he might save $25 on a crop of 1,000 bushels if he could make two trips per day; or, if he still made but one trip a day but could increase the load from 50 to 75 bushels

without adding to the number of horses, he might reduce the cost of hauling by one-third, thus saving about $17.

The average load of cotton, if increased to twice its present size and thus made about the same as the average load of wheat, might be hauled at little more than one-half its present cost per 100 pounds. Lowering the average cost of hauling cotton from 16 cents per 100 pounds, as it now seems to be, to 8 cents, would effect a saving of about 40 cents per bale, and the total amount saved on a crop equal to that of 1905 would probably exceed $4,000,000.

LAND FROM THE WATERS

[In a remarkable little book, Man and the Earth (New York, 1906), Nathaniel S. Shaler, late professor in Harvard University, surveyed broadly the resources of the earth, showing how some are inevitably diminishing, and how others may be increased and improved. In the chapter "The Unwon Lands," the subject of irrigation is treated; then comes the chapter on drainage, pp. 87–100, which is here reprinted by kind permission of the author's family and of the publishers, Fox, Duffield and Co.]

How the waters encroach on the lands. When, in the process of building the continents, their surfaces are lifted above the plane of the sea, they normally become dry land, and, unless too arid, are fit for the uses of those flowering plants on which man depends for food. There are, however, a number of accidents which serve to retain a covering of water on these fields so as to make them unsuited to the uses of the higher plant life. The land may rise irregularly, leaving the depressions on its surface which become lakes. Like depressions may be formed by the downward-sinking areas, by the process which geologists term folding. Again, glacial action, by the irregular wearing of the rocks or the curious irregular heaps of débris it leaves on the surface, creates a multitude of hollows, forming lakes, until they are converted into peat bogs. Yet again, in humid countries mosses and even reeds may by their matted vegetation hold the rainfall as in a sponge, so that even hillsides become mantled with the boggy covering. Still further, the seashores have the amphibious zone of the tides, half land and half water, where the two "elements," as the ancients termed them, strive for mastery. The result of these conditions is that, when the critic man comes to survey the lands and judge

them in general very good, he has to note that much of their fields have not effectively escaped the primal realm of the waters—that there is still much for his arts to mend.

Large area reclaimable. It is surprising how large a part of the what-we-call land is so far occupied by water as to make it in its natural state unserviceable for agriculture. In the tropical regions these areas of bog and lake are least extensive; in that realm occupying probably not more than ten per cent. of the area. But in higher latitudes and in proportion as we approach the poles a greater part of the field is permanently inundated, so that from the parallels of 40° to the limits that climate sets on agriculture somewhere near one-fourth of the land area is in its primitive condition unsuited to the uses of man and has to be won to his service by the devices of the engineer.

Drainage in Europe. In Europe, because of the antiquity and high grade of its culture, the process of winning the inundated lands to use has already gone very far, so far, indeed, that in ten centuries the aspect of the land has been greatly changed. Thus in Great Britain, at the time of Alfred the Great, near one-third of the area of the island was beset with marshes or with lands of the bog type. These impenetrable swamps appear in large measure to have formed the boundaries of the separate little kingdoms of the Heptarchy, and to have been even more effective barriers than the open sea. The redemption of these lands probably began in Saxon times, if not earlier, but it appears to have gone forward slowly until the reign of James I, when the population of England began to press upon the means of subsistence and the work of draining the fens was rapidly carried on. As an adventurer in this business Oliver Cromwell, it is said, had his first clash with his sovereign. Along with others he had an important drainage concession from the crown, one that was peculiarly favorable for the reason that a Dutch company had failed in the same undertaking. When Cromwell was successful and in a position to profit largely by his

success, the impecunious Charles I appropriated a considerable part of his rightful gains. It is not unlikely that this action of the king had in the end to do with his discovery of the important fact that "he had a joint in his neck."

In Holland this process of reclaiming inundated lands has been carried much further than in any other country. When agriculture began in this region about the mouth of the Rhine, probably not one-tenth of the land now tilled was fit for that use. What was not covered with morasses lay beneath the level of the tide. In some fifteen hundred years the stout-hearted folk have made the most signal conquest ever effected by man in this winning of a state from the waters of sea and land. Work of the same nature and hardly less extensive has been done all along the lowlands which border the North Sea and the Baltic. Thus the fields of Northeastern Europe, in Great Britain, Ireland, the Low Countries, North Germany, and Scandinavia, which now support the agriculture of at least thirty million hardy people, have been won from bogs, marshes, and the bottom of the sea—areas which in America, save in a local and unimportant way, have been quite overlooked.

Other areas to drain in Europe. The task of winning land from the waters which has been so well done in Northeastern Europe and, in some measure, throughout that so-called continent, is by no means completed. Even in Holland there are great works still under way which some time during the present century will make yet further additions of hundreds of square miles won from the shallows of the sea to its tillable fields. In Russia there are vast areas awaiting the drainage engineer to bring them to the service of men so that they may yield the food for millions of people. Even in Italy, that most ancient seat of high tillage and of crowded population, there are extensive projects for reclaiming inundated areas now under discussion. These facts show us that in the reserves of land to be won before the world is fully peopled, we have to reckon largely on the parts of it which are to be reduced to

service by drainage. This reckoning is hard to make, for the reason that outside of Europe scarcely any attention has been given to the problems of drainage, so that but an approach to the truth is attainable.

Draining the sea floor. First let us note that the most extensive of the inundated lands is the sea floor, and that from its shallower part next the land the important gains of Holland have been made. The conditions which permit such winning are very common along most seashores; an embayed area of shallow water, where the tides have a considerable rise and fall, and where the winds are constant and strong enough to serve for pumping, is always available; but the bottom of the area to be drained must afford the materials for a fertile soil, as it, in fact, very generally does. It is not imperatively necessary that the shallows lie on the shores of a tidal sea so long as windmills close set by the margin of the area to be drained will serve to lower and keep down the water; there then is only the simple question of time and cost to bring the dyke's area into tillage.

The drowned valleys. The conditions of embayed waters of no great depth, and bottoms that will be fertile when drained, are normally found about the mouths of the larger rivers. The reason for this is that a recent geological accident, the newest of all having a world-wide effect, consisted in a general rise of the sea to the extent of some hundred feet, due to the upward movement of a portion of the deep-sea floor. The gain of the sea on the land led to the flooding of the valleys of the greater rivers for a long distance upward from their ancient mouths; forming such great re-entrants of the sea as we have well preserved in the admirable examples of the Chesapeake and Delaware Bays. In many cases these drowned valleys have been so far filled in with delta deposits, as in the case of the Mississippi, that the alluvial plain again projects out into the sea as at its mouth and at the Nile; more commonly there is an embayment, as in the case of Mobile Bay. In any event this inundated

valley is certain to have more or less extensive areas of shallow water which, as in Holland, may be drained and turned to cultivated fields.

The work of the mangrove trees. Besides the land won from the sea by the plants which develop the marine marshes in the higher latitude, we find in the tropics a group of trees known as mangroves, which have an even more swift and effective method of capturing land in shallow embayments. These trees are fitted to grow in salt-water silt, submerged it may be by some feet at high tide. They have long runner-like branches which, as they grow, extend outward and downward into the water of the bays until they touch the bottom, where they take root and form new crowns and stems which in like manner send their runners further seaward. In this way a mangrove swamp will speedily close over a shallow bay even if it be some miles in width, covering it with a dense low forest. While the trees are thus marching outward, their seed, long cylinders in form, with grapples at their lower end, catch on the bottom as they drift away from the plant that bore them, rapidly grow to the surface of the water, and found new plantations. Beneath the very dense growth of the mangroves the scouring action of the tides and waves is arrested and a rapid deposit of plant and animal remains takes place, so that what was sea bottom is soon lifted to the state of a fresh-water swamp. As there are numerous varieties of mangroves in the tropical regions, some of which, as in Florida, extend their range to several degrees further toward the poles, the area they occupy and the land they have won from the sea are alike great. There is no basis for a reckoning as to the extent of their work, but it is evident that in the aggregate these fields must amount to some tens of thousand square miles, all of which have been brought by these remarkable plants into the state where the engineer may easily complete the work of converting them to the uses of man.

Area reclaimable from the sea. Although the basis for computation is imperfect, it may fairly be reckoned that in

this debatable ground of the shore zone now occupied by mud flats, marshes, and mangrove swamps, there is a reserve of land awaiting such work of improvement as has been done in Holland, amounting to an aggregate area of not less than 200,000 square miles of land which with a fully peopled earth will be brought into tillage. As this land is of rare fertility and enduring to the tax of cropping beyond that of any upland fields, it has a prospective value as a human asset far beyond an equal area of ordinary ground. They are likely, in time, to afford the food for several hundred million people.

Area reclaimable from rivers. Turning now to the areas of the continents which are occupied by the fresh waters, as in swamps and lakes, we find a more extensive set of fields for reclamation than on the seashore belt—and a much greater variety of problems for the work of the drainage engineer. First we will consider the clearly limited group of areas which lie along the great rivers, where the annual floods render the land untillable. The higher parts of these alluvial plains where the annual inundations are such as to prevent tillage are easily dealt with by ordinary dyking, and have been thus improved in all the great valleys of long-occupied countries. Yet there remains along the larger streams of Africa, the Americas, and Northern Asia aggregating several hundred thousand square miles of naturally fertile land still unwon to use. A rough reckoning of these areas which gives only approximate results, indicates that the possible winning in the ultimate state of culture will amount to not less than 300,000 square miles with a tillage value for the area quite as great as that which may be had from the gains made on the seashores, or the possible subsistence of many million. If it should prove possible to till the middle and lower reaches of the great rivers which flow toward the Arctic Ocean, the Mackenzie in North America, and the several streams that traverse Siberia, the aggregate area of useful alluvial land may be much greater than is indicated by this reckoning.

How glacial lakes were formed. The true morasses, those

inundated fields lying outside the alluvial fields, are much more abundant than the winnable flooded ground beside the rivers. The most common of this group are the bogs formed in the lakes which gathered in the shallow pits that were shaped by the irregular disposition of the drift left on the surface of those areas occupied by the ice in the last glacial period. When that covering melted away these basins so placed as to hold water were almost incredibly numerous. Thus, in New England, when the earth was cleared of the glaciers, the number of them varying in size from areas of an acre to those one hundred square miles in extent were to be numbered by the tens of thousands. The writer has estimated that not less than ten per cent. of this district was thus covered with tarns or lakes. Taking the glaciated parts of the world as a whole, the disturbance of the drainage induced by the ice invasion probably brought about something like this proportion of inundated lands where in the earlier times the brooks and rivers had in their usual manner provided a complete drainage.

Growth of peat bogs. As soon as the glacial sheet had disappeared and the basins held in its débris were filled by water, a process of closing them began, a process which has been continued to our own day. Along the shores of each of those lakes where the waves did not have too much power to admit of such growth, a species of moss known as sphagnum, the form familiar in almost any swamp, found a foothold. The microscopic spores of this plant are readily borne by the wind for many miles from their parent stations, so that as fast as the pools were formed, the growth began, and as the ice sheet retreated the mosses were always ready to set about their peculiar work. Their task is, indeed, one of the most extensive and important of those performed by vegetable life. It is as follows:

Beginning with a delicate mat formed of the intermeshed fronds, the sphagnum mosses quickly form a shelf of their living and dead parts which extends outwardly from the shore

and increases in depth until it may be some feet in thickness; next the shore it rests upon the bottom, but in deeper water it floats with its surface a foot or so above the water. From the lower margin of this raft of moss the dead parts of the plants fall upon the bottom and by their decay from the familiar black mud or soft peat which often gathers to the depth of twenty or thirty feet. Given time—and in a geological sense no long period is required—and a lake a mile or two in diameter will be closed over and solidly filled with the muck deposit. Only when the lake is of such area that heavy waves may form on it, which serve to break up the advancing mat of vegetation, is it preserved from this agent of obliteration. The result is that by far the greater number of the glacial lakes formed in New England when the ice of the last glacial period disappeared have been converted into peat bogs; probably more than nine-tenths of them have been thus closed. Further to the northward, where the ice went off in more recent times, than near its border, the process of occluding the glacial lakes is naturally less advanced than in New England. In these we more often find "quaking bogs," i.e., instances in which the sheet has closed over the lake, but where the deposit formed on the bottom has not been built up to where it supports the mat so that the peat-making process is complete.

Upland or climbing bogs. The foregoing sketch of the history of peat morasses formed in lakes needs to be supplemented by an account of another method of their development, which in many parts of the world where the air is moist and cool gives rise to even more extensive deposits —those known as upland or climbing bogs. In this group the sphagnum begins its growth on the margin of any pool and extends its sheet away from the water so that it mounts slopes of considerable steepness, sometimes ascending to heights of a hundred feet or more in an advance of a mile. As it grows in thickness, the lower part of the mat dies and so forms an ever-increasing mass of soft peat on which the

living tangle rests, holding, as in a sponge, the water needed for its growth. So effectively does it do this that in times of heavy rain the bog swells up and occasionally it bursts, discharging a tide of black mud which flows like a lava stream, in many instances carrying widespread destruction to farms and villages in the valleys through which it flows.

In effect the fields covered by climbing bogs are limited to regions north and south of the parallels of 40° in either hemisphere, for there alone do we find the relatively low temperature and the high measure of humidity needed for their development. They originally mantled a considerable part of the land now tilled in the northern part of Great Britain, nearly all of the lower ground in Ireland, and much of the most fertile portion of Germany and Scandinavia, about the shores of the North Sea and the Baltic. They still exist in vast development in Northern Russia and Siberia, in Patagonia, and in Canada. South of Canada, they are so scantily developed as to have no interest from our point of view. In Africa and Australia they find no place because of the high temperature or the dryness of the air, both of which conditions prevent the growth of the bog-making mosses.

Area reclaimable from bogs. It is not easy to estimate the amount of tillable soil which can be won from the fields now possessed by moss bogs; it may be taken as probable that the aggregate area exceeds 300,000 square miles; it being, perhaps, the largest part of the earth's surface which can be won from the covering of water. Should it prove possible to develop tillage in any considerable part of the tundra of Siberia the total may much exceed that amount; it may on those conditions rise to near half a million square miles.

As for the quality of the soil obtained from these peat-covered fields, experience shows that, though variable, it is good for a wide range of uses. The fields whence the climbing bogs have been stripped are of great and enduring fertility. The level bogs of the deposits which have filled lakes have a different character; they cannot so readily be brought to

tillage. In fact, it is commonly necessary to strip the mat of living sphagnum off and then to cover the surface with sand or mix the upper part with ordinary earth. Thus treated the ground becomes well suited to a great range of important plants, especially those reared in market gardens. The interesting industry of cranberry growing is one of those forms of tillage in which the peat soil is turned to account. In fact this species of plant will not commercially develop in any other conditions save those of drained swamps.

Area reclaimable from lakes. One of the largest bodies of unwon yet winnable lands is that now covered by the waters of lakes. Their drainable areas are very numerous, especially so in glaciated districts in the part of North America recently occupied by the ice-fields. Their basins are to be reckoned by the tens of thousands, and their aggregate area is probably not less than fifteen per cent. of the field in which they lie. The greater number of them, though probably not half of the total surface, are to be, in whole or in part, drained and brought under tillage as soon as population begins to press upon means of subsistence. The ground thus made available for tillage is likely in North America to amount to not less than twenty thousand square miles.

The quality of the soil to be won by the drainage of lakes will in most instances be excellent. These areas of water, though in practically all instances of geologically recent origin, have been long enough in existence to have enriched their bottoms with deposits of lime phosphate and other materials favorable to the growth of plants. The soils drained from these accumulations will be prevailingly clayey and rather heavy, but very little enduring to tillage and of far more than average fertility. They may be reckoned on to afford fields as well suited to agriculture as the heavy land of Northern Ohio, Indiana, and Illinois, where much of the surface took on its character below the former extension of the neighboring Great Lakes.

Lakes other than glacial. Although the greater number

of drainable lakes and the largest aggregate area of them lie in the glaciated districts, there are many such in parts of the world where the ice-sheets have not shaped the surface. Other fresh-water basins are among the results of mountain-building actions which have lowered considerable areas, forming such lakes as the Dead Sea of Judea, or the extensive lakes of the upper Nile. Many of these basins are so deep, their bottoms often lying below the sea-level, that complete drainage is impossible in many, if not most instances. However, the conditions often make it possible to lower the surface of the water to such an extent that large fields of good land may be won.

As a whole, the lake beds may be reckoned on as likely to afford, in the ages when the earth is crowded with men, a resource in the way of tillable lands in area comparable to that which may be had from the deserts, the morasses, and the shallow fringes of the sea.

CONSERVATION OF NATIONAL RESOURCES

[THE President of the United States created June 8, 1908, a National Conservation Commission of five members, with Gifford Pinchot as chairman, to inquire into the condition of the national resources. The final report of the Commission, made December 7, 1908, was a brief summary in about fourteen pages of the large body of information collected. The report was submitted to a Joint Conservation Conference meeting in Washington, December 10, 1908, and made up of governors of States, State Conservation Commissions, and representatives of numerous scientific and civic organizations. The Conference having heard the report and "having fully deliberated thereon," indorsed it "as a wise, just, and patriotic statement of the resources of the nation, of the thoughtless and profligate manner in which some of these resources have been and are being wasted, and of the urgent need for their conservation in the interests of this and future generations, to the end that the prosperity and perpetuity of the nation may be assured."

The report opens with a general statement of the causes arousing public interest in the subject. Omitting this and a number of the recommendations of legislation contained in the report, the following extract reproduces almost entire the remarkably compact statement of facts regarding our national resources at the time of the report. The complete report accompanied by Proceedings of the Joint Conservation Conference, and by numerous scientific papers (in all nearly 1800 pages) was published as Senate Document 676, for the 60th Congress, 2d session, Vols. 10, 11, 12.]

Minerals. The mineral production of the United States for 1907 exceeded $2,000,000,000, and contributed 65 per cent. of the total freight traffic of the country. The waste in the extraction and treatment of mineral products during the same year was equivalent to more than $300,000,000.

The production for 1907 included 395,000,000 tons of bituminous and 85,000,000 tons of anthracite coal, 166,000,000 barrels of petroleum, 52,000,000 tons of iron ore, 2,500,000

tons of phosphate rock, and 869,000,000 pounds of copper. The values of other mineral products during the same year included clay products, $162,000,000; stone, $71,000,000; cement, $56,000,000; natural gas, $53,000,000; gold, $90,000,000; silver, $37,000,000; lead $39,000,000; and zinc, $26,000,000.

The available and easily accessible supplies of coal in the United States aggregate approximately 1,400,000,000,000 tons. At the present increasing rate of production this supply will be so depleted as to approach exhaustion before the middle of the next century.

The known supply of high-grade iron ores in the United States approximates 4,788,150,000 tons, which at the present increasing rate of consumption can not be expected to last beyond the middle of the present century. In addition to this, there are assumed to be 75,116,070,000 tons of lower grade iron ores which are not available for use under existing conditions.

The supply of stone, clay, cement, lime, sand, and salt is ample, while the stock of the precious metals and of copper, lead, zinc, sulphur, asphalt, graphite, quicksilver, mica, and the rare metals can not well be estimated, but is clearly exhaustible within one to three centuries unless unexpected deposits be found.

The known supply of petroleum is estimated at fifteen billion to twenty billion barrels, distributed through six separate fields having an aggregate area of 8,900 square miles. The production is rapidly increasing, while the wastes and the loss through misuse are enormous. The supply cannot be expected to last beyond the middle of the present century.

The known natural-gas fields aggregate an area of 9,000 square miles, distributed through twenty-two States. Of the total yield from these fields during 1907, 400,000,000,000 cubic feet, valued at $62,000,000, were utilized, while an equal quantity was allowed to escape into the air. The daily waste of natural gas—the most perfect known fuel—is over 1,000,-

000,000 cubic feet, or enough to supply every city in the United States of over 100,000 population.

Phosphate rock, used for fertilizer, represents the slow accumulation of organic matter during past ages. In most countries it is most scrupulously preserved; in this country it is extensively exported, and largely for this reason its production is increasing rapidly. The original supply cannot long withstand the increasing demand.

The consumption of nearly all our mineral products is increasing far more rapidly than our population. In many cases the waste is increasing more rapidly than the number of our people. In 1776 but a few dozen pounds of iron ore were in use by the average family; now our annual consumption of high-grade ore is over 1,200 pounds per capita. In 1812 no coal was used; now the consumption is over five tons and the waste nearly three tons per capita.

While the production is increasing enormously, the waste and loss in mining are diminishing. At the beginning of our mineral development the coal abandoned in the mine was two or three times the amount taken out and used. Now the mine waste averages little more than half the amount saved. The chief waste is in imperfect combustion in furnaces and fire boxes. Steam engines utilize on the average about 8 per cent. of the thermal energy of the coal. Internal combustion engines utilize less than 20 per cent., and in electric lighting far less than 1 per cent. of the thermal energy is rendered available.

With increasing industries new mineral resources become available from time to time. Some lignites and other low-grade coals are readily gasified and, through the development of internal-combustion engines, may be made to check the consumption of high-grade coals.

Peat is becoming important; it is estimated that 14,000,000,000 tons are available in the United States. Its value is enhanced because of distribution through States generally remote from the fields of coal, oil, and natural gas.

The uses of all our mineral resources are interdependent. This is especially true of coal and iron, of which neither can be produced or used without aid from the other, and in the production or reduction of all other minerals both coal and iron are employed. The same standard minerals are necessary to the development of power, of which the use is increasing more rapidly than that of any other commodity.

The building operations of the country now aggregate about $1,000,000,000 per year. The direct and indirect losses from fire in the United States during 1907 approximated $450,000,000, or one-half the cost of construction. Of this loss four-fifths, or an average of $1,000,000 per day, could be prevented, as shown by comparison with the standards of construction and fire losses in the larger European countries.

So far as the ores are taken from the mines and reduced to metals, these resources are capitalized; but after thus being changed to a more valuable form they should be so used as to reduce to a minimum the loss by rust, electrolytic action, and other wastes. . . .

While the distribution and quantity of most of our important mineral substances are known in a general way, there is imperative need for further surveys and investigations and for researches concerning the less-known minerals.

Lands. The total land area of continental United States is 1,920,000,000 acres. Of this but little more than two-fifths is in farms, and less than one-half of the farm area is improved and made a source of crop production. We have nearly 6,000,000 farms; they average 146 acres each. The value of the farms is nearly one-fourth the wealth of the United States. There are more than 300,000,000 acres of public grazing land. The number of persons engaged in agricultural pursuits is more than 10,000,000. . . .

There has been a slight increase in the average yield of our great staple farm products, but neither the increase in acreage nor the yield per acre has kept pace with our increase in population. Within a century we shall probably have to

feed three times as many people as now; and the main bulk of our food must be grown on our own soil.

The area of cultivated land may possibly be doubled. In addition to the land awaiting the plow, 75,000,000 acres of swamp land can be reclaimed, 40,000,000 acres of desert land irrigated, and millions of acres of brush and wooded land cleared. Our population will increase continuously, but there is a definite limit to the increase of our cultivated acreage. Hence we must greatly increase the yield per acre. The average yield of wheat in the United States is less than 14 bushels per acre, in Germany 28 bushels, and in England 32 bushels. We get 30 bushels of oats per acre, England nearly 45, and Germany more than 47. Our soils are fertile, but our mode of farming neither conserves the soil nor secures full crop returns. Soil fertility need not be diminished, but may be increased. The large yields now obtained from farms in Europe which have been cultivated for a thousand years prove this conclusively. Proper management will double our average yield per acre. The United States can grow the farm products needed by a population more than three times as great as our country now contains.

The greatest unnecessary loss of our soil is preventable erosion. Second only to this is the waste, nonuse, and misuse of fertilizer derived from animals and men.

The losses to farm products due to injurious mammals is estimated at $130,000,000 annually; the loss through plant diseases reaches several hundred million dollars; and the loss through insects is reckoned at $659,000,000. The damage by birds is balanced by their beneficent work in destroying noxious insects. Losses due to the elements are large, but no estimate has been made of them. Losses to live stock from these causes are diminishing because of protection and feeding during winter. The annual losses from disease among domestic animals are: Horses, 1.8 per cent; cattle 2 per cent.; sheep, 2.2 per cent., and swine, 5.1 per cent. Most of these farm losses are preventable.

There is a tendency toward consolidation of farm lands. The estimated area of abandoned farms is 16,000 square miles, or about 3 per cent. of the improved land. The causes of abandonment differ in different parts of the country. Where most prevalent, it is caused principally by erosion and exhaustion of the soil.

The product of the fisheries of the United States has an annual value of $57,000,000. Fish culture is carried on by the nation and the States on an enormous scale. Most of the more important food species are propagated, and several species are maintained in that way. Fish from forest waters furnish $21,000,000 worth of food yearly, a supply dependent on the preservation of the forests.

Our wild game and fur-bearing animals have been largely exterminated. To prevent their complete extinction the States and the United States have taken in hand their protection, and their numbers are now increasing. Forest game yields over $10,000,000 worth of food each year.

With game birds the story is much the same—wanton destruction until the number has been greatly reduced, followed in recent years by wise protection, which in some cases allows the remnant to survive and even to increase.

Each citizen of the United States owns an equal undivided interest in about 387,000,000 acres of public lands, exclusive of Alaska and the insular possessions. Besides this there are about 235,000,000 acres of national forests, national parks, and other lands devoted to public use. . . .

Forests. Next to our need of food and water comes our need of timber.

Our industries which subsist wholly or mainly upon wood pay the wages of more than 1,500,000 men and women.

Forests not only grow timber, but they hold the soil and they conserve the streams. They abate the wind and give protection from excessive heat and cold. Woodlands make for the fiber, health, and happiness of the citizen and the nation.

Our forests now cover 550,000,000 acres, or about one-fourth

of the United States. The original forests covered not less than 850,000,000 acres.

Forests publicly owned contain one-fifth of all our standing timber. Forests privately owned contain four-fifths of the standing timber. The timber privately owned is not only four times that publicly owned, but is generally more valuable.

Forestry is now practised on 70 per cent. of the forests publicly owned and on less than 1 per cent. of the forests privately owned, or on only 18 per cent. of the total area of forests.

The yearly growth of wood in our forests does not average more than 12 cubic feet per acre. This gives a total yearly growth of less than 7,000,000,000 cubic feet.

We have 200,000,000 acres of mature forests, in which yearly growth is balanced by decay; 250,000,000 acres partly cut over or burned over, but restocking naturally with enough young growth to produce a merchantable crop, and 100,000,000 acres cut over and burned over, upon which young growth is lacking or too scanty to make merchantable timber.

We take from our forests yearly, including waste in logging, and in manufacturing, 23,000,000,000 cubic feet of wood. . . .

Since 1870 forest fires have destroyed a yearly average of fifty lives and $50,000,000 worth of timber. Not less than 50,000,000 acres of forest is burned over yearly. The young growth destroyed by fire is worth far more than the merchantable timber burned.

One-fourth of the standing timber is lost in logging. The boxing of long-leaf pine for turpentine has destroyed one-fifth of the forests worked. The loss in the mill is from one-third to two-thirds of the timber sawed. The loss of mill product in seasoning and fitting for use is from one-seventh to one-fourth.

Of each 1,000 feet which stood in the forest, an average of only 320 feet of lumber is used.

We take from our forests each year, not counting the loss by fire, three and a half times their yearly growth. We take 40 cubic feet per acre for each 12 cubic feet grown; we take

260 cubic feet per capita, while Germany uses 37 and France 25 cubic feet.

We tax our forests under the general property tax, a method abandoned long ago by every other great nation. Present tax laws prevent reforestation of cut-over land and the perpetuation of existing forests by use.

Great damage is done to standing timber by injurious insects. Much of this damage can be prevented at small expense.

To protect our farms from wind and to reforest land best suited for forest growth will require tree planting on an area larger than Pennsylvania, Ohio, and West Virginia combined. Lands so far successfully planted make a total area smaller than Rhode Island; and year by year, through careless cutting and fires, we lower the capacity of existing forests to produce their like again, or else totally destroy them.

In spite of substitutes we shall always need much wood. So far our use of it has steadily increased. The condition of the world's supply of timber makes us already dependent upon what we produce. We send out of our country one and a half times as much timber as we bring in. Except for finishing woods, relatively small in amount, we must grow our own supply or go without. Until we pay for our lumber what it costs to grow it, as well as what it costs to log and saw, the price will continue to rise.

The preservation by use, under the methods of practical forestry, of all public forest lands, either in State or federal ownership, is essential to the permanent public welfare. In many forest States the acquirement of additional forest lands as State forests is necessary to the best interests of the States themselves.

The conservation of our mountain forests, as in the Appalachian system, is a national necessity. These forests are required to aid in the regulation of streams used for navigation and other purposes. The conservation of these forests is impracticable through private enterprise alone, by any State

alone, or by the Federal Government alone. Effective and immediate coöperation between these three agencies is essential. Federal ownership of limited protective areas upon important watersheds, effective State fire patrol, and the cooperation of private forest owners are all required.

The true remedy for unwise tax laws lies not in laxity in their application nor in special exemptions, but in change in the method of taxation. An annual tax upon the land itself exclusive of the value of the timber, and a tax upon the timber when cut, is well adapted to actual conditions of forest investment, and is practicable and certain. It is far better that forest land should pay a moderate tax permanently than that it should pay an excessive revenue temporarily and then cease to pay at all.

Forests in private ownership can not be preserved unless they are protected from fire. We need good fire laws, well enforced. Fire control is impossible without an adequate force of men whose sole duty is fire patrol during the dangerous season.

The conservative use of the forest and of timber by American citizens will not be general until they learn how to practise forestry. Through a vigorous national campaign in education, forestry has taken root in the great body of American citizenship. The basis already exists upon which to build a structure of forest conservation which will endure. This needs the definite commitment of State governments and the Federal Government to their inherent duty of teaching the people how to care for their forests. The final responsibility, both for investigative work in forestry and for making its results known, rests upon the States and upon the nation.

By reasonable thrift, we can produce a constant timber supply beyond our present need, and with it conserve the usefulness of our streams for irrigation, water supply, navigation, and power.

Under right management our forests will yield over four times as much as now. We can reduce waste in the woods and

in the mill at least one-third, with present as well as future profit. We can perpetuate the naval-stores industry. Preservative treatment will reduce by one-fifth the quantity of timber used in the water or in the ground. We can practically stop forest fires at a cost yearly of one-fifth the value of the merchantable timber burned.

We shall suffer for timber to meet our needs until our forests have had time to grow again. But if we act vigorously and at once we shall escape permanent timber scarcity.

Waters. The sole source of our fresh water is rainfall, including snow. From this source all running, standing, and ground waters are derived. The habitability of the country depends on these waters. Our mean annual rainfall is about thirty inches; the quantity about 215 trillion cubic feet per year, equivalent to ten Mississippi rivers.

Of the total rainfall, over half is evaporated; about a third flows into the sea; the remaining sixth is either consumed or absorbed. These portions are sometimes called, respectively, the fly-off, the run-off and the cut-off. They are partly interchangeable. About a third of the run-off or a tenth of the entire rainfall, passes through the Mississippi. The run-off is increasing with deforestation and cultivation.

Of the 70 trillion cubic feet annually flowing into the sea, less than 1 per cent. is retained and utilized for municipal and community supply; less than 2 per cent. (or some 10 per cent. of that in the arid and semiarid regions) is used for irrigation; perhaps 5 per cent. is used for navigation, and less than 5 per cent. for power.

For municipal and community water supply there are protected catchment areas aggregating over 1,000,000 acres, and over $250,000,000 are invested in waterworks, with nearly as much more in the appurtenant catchment areas and other lands. The population so supplied approaches 10,000,000, and the annual consumption is about 37,500,000,000 cubic feet. The better managed systems protect the catchment areas by forests and grass; the water is controlled and the storm prod-

uct used, but there is large waste after the water enters the mains.

For irrigation it is estimated that there are $200,000,000 invested in dams, ditches, reservoirs, and other works for the partial control of the waters, and that 1,500 billion cubic feet are annually diverted to irrigable lands, aggregating some 20,000 square miles. Except in some cases through forestry, few catchment areas are controlled, and few reservoirs are large enough to hold the storm waters. The waste in the public and private projects exceeds 60 per cent., while no more than 25 per cent. of the water actually available for irrigation of the arid lands is restrained and diverted.

There are in continental United States 287 streams navigated for an aggregate of 26,226 miles, and as much more navigable if improved. There are also 45 canals, aggregating 2,189 miles, besides numerous abandoned canals. Except through forestry in recent years, together with a few reservoirs and canal locks and movable dams, there has been little effort to control headwaters or catchment areas in the interests of navigation, and none of our rivers are navigated to more than a small fraction even of their effective low-water capacity.

The water power now in use is 5,250,000 horse-power; the amount running over government dams and not used is about 1,400,00 horse-power; the amount reasonably available equals or exceeds the entire mechanical power now in use, or enough to operate every mill, drive every spindle, propel every train and boat, and light every city, town, and village in the country. While the utilization of water power ranks among our most recent and most rapid industrial developments, little effort has been made to control catchment areas or storm waters in any large way for power, though most plants effect local control through reservoirs and other works. Nearly all the freshet and flood water runs to waste, and the low waters which limit the efficiency of power plants are increasing in frequency and duration with the increasing flood run-off.

The practical utility of streams for both navigation and power is measured by the effective low-water stage. The volume carried when the streams rise above this stage is largely wasted and often does serious damage. The direct yearly damage by floods since 1900 has increased steadily from $45,000,000 to over $238,000,000. The indirect loss through depreciation of property is great, while a large loss arises in impeded traffic through navigation and terminal transfers.

The freshets are attended by destructive soil erosion. The soil matter annually carried into lower rivers and harbors or into the sea is computed at 783,000,000 tons. Soil wash reduces by 10 or 20 per cent. the productivity of upland farms and increases channel cutting and bar building in the rivers. The annual loss to the farms alone is fully $500,000,000, and large losses follow the fouling of the waters and the diminished navigability of the streams.

Through imperfect control of the running waters lowlands are temporarily or permanently flooded. It is estimated that there are in mainland United States about 75,000,000 acres of overflow and swamp lands requiring drainage; that by systematic operation these can be drained at moderate expense, and that they would then be worth two or three times the present value and cost of drainage, and would furnish homes for 10,000,000 people.

It is estimated that the quantity of fresh water stored in lakes and ponds (including the American portion of the Great Lakes) is about 600 trillion cubic feet, equivalent to three years' rainfall or eight years' run-off. Some 6,000,000 of our people draw their water supply from lakes.

A large part of that half of the annual rainfall not evaporated lodges temporarily in the soil and earth. It is estimated that the ground water to the depth of 100 feet averages 16⅔ per cent. of the earth volume, or over 1,400 trillion cubic feet, equivalent to seven years' rainfall or twenty years' run-off. This subsurface reservoir is the essential basis of agriculture and other industries and is the chief natural re-

source of this country. It sustains forests and all other crops and supplies the perennial springs and streams and wells used by four-fifths of our population and nearly all our domestic animals. Its quantity is diminished by the increased run-off due to deforestation and injudicious farming. Although the volume of the available ground water is subject to control by suitable treatment of the surface, little effort has been made to retain or increase it, and it is probable that fully 10 per cent. of this rich resource has been wasted since settlement began. The water of the strata below 100 feet supplies artesian and deep wells, large springs, and thermal and mineral waters. It can be controlled only through the subsurface reservoir.

Of the 35 trillion cubic feet of cut-off, the chief share is utilized by natural processes or by agriculture and related industries. On an average the plant tissue of annual growths is three-fourths and of perennial growths three-eighths water, of human and stock food over 80 per cent. is water, and in animal tissue the ratio is about the same; and since water is the medium for organic circulation, the plants and animals of the country yearly require an amount many times exceeding their aggregate volume. Even in the more humid sections of the country the productivity of the soil and the possible human population would be materially increased by a greater rainfall, leaving a larger margin for organic and other chemical uses. Except through agriculture and forestry little general effort is made to control the annual cut-off, although some farmers in arid regions claim to double or triple the crop from given soil by supplying water just when needed and withholding it when not required.

Water is like other resources in that its quantity is limited. It differs from such mineral resources as coal and iron, which once used are gone forever, in that the supply is perpetual; and it differs from such resources as soils and forests, which are capable of renewal or improvement, in that it can not be augmented in quantity, though like all other resources it can be better utilized. . . .

The first requisite for waterway improvement is the control of the waters in such manner as to reduce floods and regulate the regimen of the navigable rivers. The second requisite is development of terminals and connections in such manner as to regulate commerce.

In considering the uses and benefits to be derived from the waters, the paramount use should be water supply; next should follow navigation in humid regions and irrigation in arid regions. The development of power on the navigable and source streams should be coördinated with the primary and secondary uses of the waters. Other things equal, the development of power should be encouraged, not only to reduce the drain on other resources, but because properly designed reservoirs and power plants retard the run-off and so aid in the control of the streams for navigation and other uses.

Broad plans should be adopted for a system of waterway improvement extending to all uses of the waters and benefits to be derived from their control, including the clarification of the water and abatement of floods for the benefit of navigation; the extension of irrigation; the development and application of power; the prevention of soil wash; the purification of streams for water supply; and the drainage and utilization of the waters of swamp and overflow lands.

To promote and perfect these plans scientific investigations, surveys, and measurements should be continued and extended, especially the more accurate determination of rainfall and evaporation, the investigation and measurement of ground water, the gaging of streams and determination of sediment, and topographic surveys of catchment areas and sites available for control of the waters for navigation and related purposes.

National efficiency. [Here were given a few of the data set forth more fully in the Report on National Vitality, a summary of which is presented elsewhere in this book.]

General conclusions. The permanent welfare of the nation

demands that its natural resources be conserved by proper use. To this end the States and the nation can do much by legislation and example. By far the greater part of these resources is in private hands. Private ownership of natural resources is a public trust; they should be administered in the interests of the people as a whole. The States and nation should lead rather than follow in the conservative and efficient use of property under their immediate control. But their first duty is to gather and distribute a knowledge of our natural resources and of the means necessary to insure their use and conservation, to impress the body of the people with the great importance of the duty, and to promote the coöperation of all. No agency, State, federal, corporate, or private, can do the work alone.

Finally, the conservation of our resources is an immediate and vital concern. Our welfare depends on conservation. The pressing need is for a general plan under which citizens, States, and nation may unite in an effort to achieve this great end. The lack of coöperation between the States themselves, between the States and the nation, and between the agencies of the National Government, is a potent cause of the neglect of conservation among the people. An organization through which all agencies—State, national, municipal, associate, and individual—may unite in a common effort to conserve the foundations of our prosperity is indispensable to the welfare and progress of the nation. To that end the immediate creation of a national agency is essential. Many States and associations of citizens have taken action by the appointment of permanent conservation commissions. It remains for the nation to do likewise, in order that the States and the nation, associations and individuals, may join in the accomplishment of this great purpose.

DEPRECIATION IN COTTON FACTORIES

[In the Tariff Board's report on Cotton Manufactures the difficulties in arriving at a rate of depreciation of the plant are explained, and an average rate of depreciation is indicated. (House Document 643, 62d Congress, 2d session; pub. March 26, 1912, p. 376.)]

Depreciation. The schedule was so drawn up as to get not only the lump sum charged by different concerns under that head, but also the basis on which the charge was figured. For this reason the original value of the buildings and of the machinery and equipment were called for. In most instances, however, this proved an impossible task. Several companies have been in existence for decades, some of them dating back anywhere from one-half to three-quarters of a century, and their records failed to disclose the necessary information. In other cases companies have gone through one or more reorganizations, changing ownership, in which case they were frequently acquired as a going concern without any detailed record being preserved of the original physical value of the plant. It was therefore found more practicable to take as a basis the present appraisal value of the different plants. These values were in most cases ascertained from appraisals of mutual insurance companies, records of which were kept at the mills. In the few cases where no appraisals had been made the value was ascertained from original construction accounts and similar resources.

The rate charged for depreciation differs from plant to plant. Some have one rate for buildings and another for machinery and equipment. Others carry the system still further and have different rates of depreciation for various parts of the plant, charging one rate for spinning machinery, another rate for weaving, and another for the boilers and power

plant, etc. Others, again, have one flat rate, including both buildings and machinery, although they recognize that the two are subject to different degrees of depreciation. In the case of one or two important companies it was found that the single rate of depreciation was carried still further, including not only machinery and buildings, but even the value of the real estate. Still others, as has been pointed out earlier in the discussion of the question of repairs and maintenance, carried no allowance for depreciation, but charged all additions to the plant by way of new machinery, extensions of buildings, etc., to the repair account, thus paying for it out of current earnings.

It therefore becomes clearly apparent that some uniform rate for depreciation as well as repairs would have to be adopted. A modern mill equipped with looms of the latest construction, which have been in operation only a few years, will manifestly have an entirely different repair account from that of a mill with looms anywhere from twenty to fifty years old. Not only will the efficiency, and therefore the resultant labor cost per unit of product, be different in the two mills, but the actual expenses incurred for repairs will be vastly greater in one case as compared with the other. Repairs may vary greatly from year to year. A new plant may go on for a number of years incurring only a slight expense for repairs which makes up for the preceding years. An older mill, after running for several years, may spend a considerable amount of money on overhauling the mill, charging the expense to repairs for that year, and, as a result of this, run for several years after that at a small expense. It would be purely a matter of accident for the investigation of the board to cover either the one or the other year, yet neither the heavy expense for repairs during the one year nor the very light expense during the intervening years would be a fair figure to be charged to the repair account.

To arrive at an accurate estimate of the repair account would have required taking the repairs for several years and then averaging the amount. This could not be done without a care-

ful audit of every item of expense to separate the expenses properly chargeable to repairs from those incurred for plant additions and betterments. With the limited time at the disposal of the board such a procedure was out of the question. The only way out of the difficulty was, therefore, to arrive at a normal rate for depreciation and repairs, based upon the experience of leading engineers engaged in the erection of textile plants and the installation of textile machinery. After a consultation with such engineers and a leading appraisal company in the United States, which has appraised a large number of textile plants both in the cotton and woolen industries at different stages in the lives of the plants, it was found that a fair normal rate to be allowed for cotton-manufacturing plants for depreciation and repairs would be 2½ per cent. on buildings and 5 per cent. on machinery and equipment, and this rate was uniformly charged for all plants. In apportioning the total allowance between repairs and depreciation, the repair expense actually incurred during the year under investigation was deducted from the amount equal to 5 per cent. on the value of the machinery and 2½ per cent. on buildings, and the difference thus obtained was allowed for depreciation. It should be noted that in any case the element of depreciation is a very small factor in the cost of production per unit of product.

CAPITALIZATION AND URBAN LAND VALUES

[From the Principles of City Land Values, by R. M. Hurd, cited above on the subject of rents, are taken the following cogent expressions of broad experience on the subject of capitalization.]

Capitalization rate [page 129]. With an established economic rent, the sole remaining factor to transform this into intrinsic value [1] is the rate of capitalization. As capitalization rates vary with securities, Government bonds selling below a 2 per cent. basis, railroad bonds and stocks on a 3½ to 5 per cent. basis, and industrials on a 7 to 10 per cent. basis, so the rates of capitalization of urban rents vary from 4 per cent. for the highest class of property in the largest cities, to 5 and 6 per cent. for second-class property in the same cities, or for first-class property in smaller cities, 7, 8 and 10 per cent. for tenements in the largest cities, and 12 to 15 per cent. for temporary utilization or disreputable purposes in the smaller cities. The great power of capitalization rates on values is due to the fact that for every change of 1 per cent. in the rate of capitalization, values may change from twelve to twenty-five times the difference in interest. For example, a property with a net income of $10,000 would sell on an 8 per cent. basis at $125,000, on a 6 per cent. basis at $166.000, and on a 4 per cent. basis at $250,000. The lower the capitalization rate the greater the effect of any changes of values: For example, a fall from 8 to 7 per cent. adds but 14 per cent. to the value of the property, while a fall from 5 to 4 per cent. adds 25 per cent. to the value of the property. Moreover, as low interest rates apply to the

[1] ["Intrinsic value," a term with a good many troublous implications, may be here understood as valuation, or capitalization.—Ed.]

largest properties all further fractional lowering of rates results in an enormous mass of values. The marked difference between capitalization rates of high-class and low-class property in the same city indicates the large number of people who desire to own high-class property, and the few who desire to own low-class property. The reason for such preference is that with high-class property, rents are more stable and easily collected, the property is more quickly and certainly convertible, it can be mortgaged at a lower rate of interest and for a larger percentage of value, the buildings depreciate much less rapidly and the prospects of increase in value are better.

Land a slow asset. That land, even of the highest type and in the largest cities, is a slow asset, is due to a number of causes, among them being the fact that land is not easily passed from hand to hand as are stocks and bonds, land involves personal or directly deputed management, where stocks and bonds do not, there is no Exchange with daily quotations giving the values of land, as with stocks and bonds; and finally the value of land is influenced by many complex changing factors, whose effects are differently estimated by different people. Because land is a slow asset, convertibility or certainty and speed in selling it, produces a high premium for the best property by lowering its capitalization rate.

Farm acreage to city sites.[1] Starting from the condition of no value in land when a city originates, let us consider the scale of average values of residence and business land in cities of various sizes, land used for other purposes being omitted as being more of an individual problem. At the outer circumference of cities land is held as acreage, the prices per acre advancing from the normal value of farm land near cities, $50 to $150 per acre, up to market-garden land, which may earn interest on $300 to $1,000 per acre, and, finally, to speculative tracts held at $500 to $5,000 per acre, whose prices are based on the estimated earnings of the land when it secures the an-

[1] [The following paragraphs reproduce the chapter entitled, "Scale of Average Values," pp. 133–144.]

ticipated utilization. Since the proportion of land occupied by streets averages about 35 per cent., the conversion of acreage into lots means a loss in building area of that percentage, so that with the expenses of platting, opening streets, taxes, loss of interest, etc., it is generally estimated that property bought by the acre must sell by the lot for double the acre price in order to avoid loss in handling.

Mechanics' residence lots. The cheapest lots in any city are those utilized for workmen's houses, varying in smaller cities from $150 to $300. The larger the city the larger the number of well-paid mechanics and the greater the effective demand for lots. A mechanic's lot on the outskirts of a small city differs from one on the outskirts of New York not only in price but in size, those in small towns having 50 to 60 feet frontage, and those in New York 15 to 20 feet frontage with usually two-family houses on them. Thus an average price of $150 for 50 x 100 foot lots in large cities would be equivalent to $7,700 per net acre after platting, or $5,000 per acre as acreage. In the outskirts of the smaller cities platted land runs as low as $2 to $4 per front foot, and there are built up mechanics' sections with street car accommodation less than a mile from the center of cities of 30,000 population, where land sells at but $5 per front foot, equivalent to 5 cents per square foot.

Better residence lots. From this figure, land for detached residences grades upwards more in proportion to the class of people utilizing it than the size of the city, to land worth $20 to $30 per front foot for the residences of small shopkeepers and clerks, and $40 to $75 for the more fashionable residences in cities of 75,000 population and under. Such residence property would have good street car service, graded streets, sidewalks, sewer, gas, water, electric light, etc., the cost of which may vary from $5 to $15 per front foot. The best residence land in cities of 100,000 to 200,000 population runs from $75 to $150 per front foot, in cities of 200,000 population to 400,000 population from $300 to $500 per front foot, and in New

York from $2,000 to $5,000 per front foot on the side streets and $6,000 to $9,000 per front foot on Fifth Avenue.

Business lots. The poorest locations utilized for shops in the small cities are ordinarily worth from $50 to $75 per front foot from which point values rise to an average of $600 to $800 per front foot for the best business property in cities of 50,000 population, about $2,000 per front foot in cities of 200,000 population, $10,000 in cities of 2,000,000 population, and $15,000 to $18,000 in New York. Above these levels, land in the financial district of New York averages from $15,000 to $25,000 per front foot, this financial district having no counterpart in any other American city and being due to the supremacy of New York as a financial center. The highest values in London are similarly in the financial district, while in Chicago and most of the smaller cities, shopping land, owing to the large amount of retail business and small amount of banking, is worth about twice as much as financial land. The average figures given represent corner lots having not less than 2500 square feet, $350 per square foot (equal to $35,000 per front foot) having been paid thirty years ago for two small corners at Wall and Broad Streets, and recently for a small corner at Broadway and Thirty-fourth Street. An approximate scale of normal values based on the consideration that each thousand of population adds from $10 to $12 to the front-foot value of the best business locations and from $1 to $2 to the front-foot value of the best residence locations would be as follows, it being understood that the application of any such scale is limited in practice by differences in wealth, character of industries and inhabitants, topography, transportation, platting, climate, etc.

Ratio of business and residence value. The proportion between land values due to different utilities varies widely in different cities, evidencing the response of special sections to special forces. Thus the best business and the best residence land in the same city shows in New York, with $35,000 per front foot for business and $9,000 per front foot for residence

TABLE I.

City population.	Best business per front foot.	Best residences per front foot.	[Ratio of highest.
25,000	$300 to $400	$25 to $40	10.0:1
50,000	600 to 1,000	40 to 75	13.3:1
100,000	1,200 to 2,000	75 to 150	13.3:1
150,000	1,500 to 2,500	100 to 200	12.5:1
200,000	1,800 to 3,000	100 to 300	10.0:1
300,000	2,500 to 4,500	200 to 500	9.0:1
600,000	4,000 to 7,000	500 to 1,000	7.0:1
1,000,000	7,000 to 10,000	700 to 1,500	6.6:1
2,000,000	9,000 to 16,000	1,000 to 2,000	8.0:1
3,500,000	18,000 to 35,000	4,000 to 9,000	4.0:1]

land, a proportion of about 4 to 1; in Buffalo with $4,500 for business land and $500 for residence land a proportion of 9 to 1; in Minneapolis with $2,500 for business and $100 for residence land a proportion of 25 to 1; and in Seattle with $2000 for business and $100 for residence, a proportion of 20 to 1. When we turn to Southern cities, Richmond with $1,600 for business and $300 for residence shows a proportion of 5 to 1; and Atlanta with $2,000 for the best business and $200 for the best residence, a proportion of 10 to 1. As explaining this difference between Western and Southern cities, business is active and progressive in Western cities, producing high business values, while residences are scattered by the trolley and are not held together by the old-established residence sections, whereas in Southern cities the scale of business operations is less, partly owing to the diminished purchasing power of the negroes, resulting in low business values, while residence values are raised by the greater importance attached to social considerations and the greater age of the cities. The abnormally high values of residence property in New York testifies to its limited quantity and to the keen demand for it on the part of the many millionaires who make New York their home.

Wholesale business. Heavy wholesale property responds but feebly to increased population, varying from $100 to $400 in value in cities of 300,000 people or under. Where values run above these figures the property would include some retail feature. The proportion of value between the best retail land

and the best wholesale is, therefore, one which increases with the size of the city, ranging from 4 to 1 in the smaller cities, up to 10 to 1 in the largest. As examples of the value of the best retail, best wholesale and best residence land in various cities, the following list of front foot values is submitted.

TABLE II.

	Population.[1]	Best retail.	Best wholesale.	Best residence.
New York.....	3,437,202	$18,000	$3,000	$9,000
Financial land....		35,000	.....	.....
Chicago	1,698,575	15,000	2,000	2,000
Financial land....		8,000	.....	.....
Philadelphia	1,293,697	11,000	.....	2,000
Washington	278,718	5,000	.....	500
Louisville	204,731	1,700	400	150
Minneapolis	202,718	2,500	400	100
Indianapolis	169,164	2,500	400	150
Kansas City.....	163,752	2,500	450	150
St. Paul.....	163,065	1,800	400	150
Denver	133,859	1,800	250	100
Toledo	131,822	2,000	300	150
Memphis	102,320	2,000	400	60
Portland, Ore.....	90,426	1,600	300	70
Atlanta	89,872	2,000	400	200
Richmond	85,050	1,800	150	200
Seattle	80,671	2,000	400	80
Des Moines.....	62,139	1,500	200	75
Salt Lake City.....	53,531	1,400	200	75
Duluth	52,969	1,000	300	65
Spokane	36,848	800	200	60

Nature of city-growth [page 145].[2] The total value of a city's site is broadly based on population and wealth, the physical city being the reflex of the total social activities of its inhabitants. Whatever the type of city, growth consists of movement away from the point of origin and is of two kinds; central, or in all directions, and axial, or along the watercourses, railroads and turnpikes which form the framework of cities. Modern rapid transit stimulates axial growth, producing star-shaped cities, whose modification in shape comes chiefly from topographical faults. . . .

[1] [Census figures for 1900.]

[2] [The following paragraphs contain the larger part of the last chapter, the summary of the book, but omit the diagrams and charts.]

[Page 148.] While the outward glacial movement of a city continues, the daily currents of travel within alter its internal structure. The fluidity of daily traffic shifts utilities, creates plastic conditions in cities and keeps values in a state of unstable equilibrium.

Elements in a forecast of land-value. To look at the problem from the individual standpoint, in attempting to state the value of any single property, the inquiry would seek first, upon what forces does the city itself depend, how permanent are they, how diversified, are they strengthening and what is the resulting index figure, to wit, the rate of increase of the city's population; next, what are the characteristics of the section of the city in which the property is located, its past history, its present stability, its future prospects; what is the central strength of the property, how near the main center of the city or the various subcenters of attraction; what is its axial strength, the quantity, quality and regularity of the passing travel, what is the character of building on the property as to suitability, planning, physical condition, prospect of changing utility, management, convertibility, gross and net income; at what prices have surrounding property been selling, are they rising or falling, and do they suggest any factors not yet taken into account; is the property liable to be injured or benefited by changes in the building laws; is there any special enterprise or strength on the part of the owner or of surrounding owners likely to affect the property, what would be the probable effect of any inventions or improvements in transportation or the construction of buildings; and, finally, what are the general commercial conditions as affecting the earning power of tenants, actual or prospective, and financial conditions as affecting the capitalization rate.

The problem is never a simple one, being as complex as city life itself, but it is not insoluble, since the forces creating cities are governed by uniform laws, like causes producing like results, apparent exceptions being due to the influence of factors not reckoned on. The popular impression that the ability to

forecast future movements of city growth points a quick way to fortune is an overestimate, since real estate movements are slow, large capital is required to handle it, carrying charges are heavy, and even though the forecast may be ultimately correct, the rate of movement is uncertain, depending on the operation of vast economic forces impossible of exact prediction.

Unequal changes in values. If business expands and population increases in a city, the sum total of land values is certain to increase. All the land, however, will by no means increase in value, the great mass of medium business and residence property advancing but slowly since it supplies the wants of a large number of people of moderate earning power who cannot pay beyond a certain price. Coincident with the gradual lifting of values as population becomes more dense, decaying sections, left behind in the onward march, drop down the scale of inferior utilities and values, sometimes to the point of extinction. Such worn-out property exhibits in its dilapidations both absence of utility and public confession of that fact. If population and business become stationary the sum total of land values will decrease in proportion to the previous discounting of future growth, subsequent movements consisting of redistribution of value, as one part of the city or another, or one individual or another, flourishes or declines.

The principal causes of the redistribution of value in all cities are, increase in population and wealth, especially in causing relocation or extension of the best residence district, changes in transportation, such as new surface, elevated, or underground lines, new bridges, tunnels, ferries and railroads, and the readjustment of new utilities in new areas harmonizing the complex contending factors.

Present tendencies point towards greatly increased values at strategic points, with relative and frequently absolute drops in value in locations formerly competitive. The quiet side streets, the back alleys and deserted nooks and corners where land has almost no value, despite its proximity to valuable

land, will doubtless continue at their present low planes, unless they are either reached by the spreading growth from some center or are intersected by some new traffic street.

The most valuable location. The point of highest value, responding in scale and location to the growth of the city, moves from the first business center towards the best residence district, the crest of the wave usually being the middle of the retail shopping district, frequently strengthened by exceptionally large and handsome buildings, and occasionally checked by cross-traffic streets. Apart from any factors which may deflect the line of growth, the land lying in its path is certain to increase in value, the time of such increase however, being difficult to gage, while the land left behind will usually sink in value, although in the largest cities, while decreasing relatively in value and utility, it sometimes increases slightly in absolute value. New York, the one financial center of the country, is an exception in that its financial land is more valuable than its shopping land.

Causes of future changes. New inventions and new habits and customs will probably cause the most marked future changes other than those due to growth and transportation. All cheapening of the cost of buildings, all improvements in construction, all inventions, tend constantly to destroy the value of existing buildings. All improvements in transportation, such as the trolley, the elevated, the underground, the bicycle, the automobile—and in future possibly the flying machine—tend to destroy the value of these locations which depend on existing transportation. All changes in social customs, such as longer summer absences from the city, shift values, as in this instance from the city to the summer resorts. The great interchange of travel throughout the year from one city to another strengthens the radiating influence of the hotels, while the movement from residences to flats and apartments, concentrates population and augments the power of capital to attract.

Change is a law of life, and as long as human activity con-

tinues to alter the conditions of city life, and human tastes, prejudices, fashions, habits and customs continue to vary, city structure and values will shift and change, but the study of the basic principles of city growth should reduce errors in forecasting to a minimum, permitting well-equipped intelligence, whether in buying, selling, renting, loaning on, or in any way dealing with, city real estate, to largely eliminate the power of chance.

SOME EXAMPLES OF INCREASING LAND-VALUES

[In The A. B. C. of Taxation (New York, Doubleday, Page and Co., 1909), C. B. Fillebrown, president of the Massachusetts Single Tax League, has estimated the ground rent of Boston, and has given a number of examples of changes in the valuation of real estate. By the kind permission of the author the following extracts are here given without the accompanying argument in favor of the single tax, of which Mr. Fillebrown is a zealous, but fair-minded, advocate.]

A calculation of Boston's ground rent [page 16]. In a systematic attempt . . . to demonstrate beyond a reasonable doubt about how much gross ground rent there is in the city of Boston, actual sales for the year 1902 and actual rentals have been collected from official sources.

One hundred and twenty pieces of real estate in various sections of the city are shown to have been sold at prices averaging one-fifth higher than their assessed valuation, indicating that at least in these one hundred and twenty cases the valuations were less than five-sixths of the selling price.

Landlords and real estate men are the best judges of the following calculation which, taking into account the fact that the prices given in these tables are those indicated by the revenue stamps on deeds, assumes that the buildings sold for one-third more than their assessed valuation:

Deducting from the total of prices indicated by the footing of the 120 sales	$7,291,375
Four-thirds of assessed valuation of buildings	2,772,933
Would give perhaps a fair estimate of what the land sold for	4,518,442
To this it is necessary to add the capitalized tax upon the land for the same year, 1900, $3,758,600 x $14.70 (the number of dollars tax per thousand) x 20 (the number of years' purchase)	1,105,028
In order to get the gross capitalized ground rental value of the land	5,623,470

Of which the assessed valuations were only two-thirds.

Seven hundred and fifty-one rentals of estates, together with their assessed valuations, averaging $47,680 each, were also obtained from reliable sources. In the total for these it is found that the net rent is 5 per cent. (4.8), and the gross rent—net rent plus taxes—is 6 per cent. of the assessed valuation. That is to say, the net value, based upon net income to the owner, corresponds with the assessed valuation, and is five-sixths of the gross value, based upon what the user pays for the land. It is probable that these estates are in the aggregate improved to less than one-half of their normal efficiency, and hence the income which they now yield is less than 5 per cent. of the price that they would actually sell for.

In the absence of contradictory or correcting testimony, it is fair to ask the reader to accept these lists of 120 sales and 751 estate rentals respectively as an indication of the ratio existing between assessed valuation and selling value.

Based upon the foregoing ratio, the following conservative estimate of the gross land value of Boston is submitted for scrutiny and criticism:

If the assessed valuation of Boston's land for 1907, which is in round numbers	$ 653,000,000
Is five-sixths of its selling value, then the addition of one-fifth	130,600,000
Would give us as the net selling value	783,600,000
Adding to this the capitalized value of the amount of tax now on the land, $15.90 per thousand on $653,000,000, or $10,382,000 at twenty years' purchase	207,600,000
Would give us as the true capitalized ground rental value	991,200,000
Add moderate estimate for franchises, say	108,800,000
And we should have a total capitalized ground-rental value of at least	1,100,000,000
At 5 per cent. this would indicate for Boston a ground rent of	55,000,000

or considerably more than double the total taxes of Boston. . . .

An object lesson in land values [page 56]. In this and the following object lessons the valuations, unless otherwise noted, are those of 1907. The total valuations on both sides

of Winter Street, including the estates on the Tremont and Washington Street corners, were:

		LAND.	
1898	$5,142,600	$61.57 per sq. ft.	$2,681,989 per acre.
1907	8,272,000	97.50 per sq. ft.	4,247,100 per acre.
		BUILDINGS.	
1898	$675,000	$8.08 per sq. ft.	$353,836 per acre.
1907	605,200	7.13 per sq. ft.	310,582 per acre.

Showing for nine years an increase of 58 per cent. in land, and a decrease of 11 per cent. in buildings.

The assessed valuation of the estate at the southwest corner of Winter and Washington Street was in 1907 $557,000 of which $19,400 was for buildings. The land alone, 1,955 square feet, increased from $342,000, $175 per square foot, in 1898, to $537,600, $275 per square foot, in 1907. This assessed valuation of $275 per square foot for land is the highest in Boston. In 1893 the estate had been sold for $350,000. The present building was erected in 1881, but it is no distinct improvement, in height or otherwise, over its predecessor. . . .

In 1907 the estate was paying the owner an income of about $25,000. The Transit Commission took this estate by eminent domain, and settled for it in 1908 for $630,000 or $320 per square foot for the land and buildings. After appropriating subway station accommodations, it leased the balance of the estate for the sum of $28,000 a year and taxes, or $36,000 as long as no taxes are assessed. This is a return of about 4½ per cent. net on the purchase price of $630,000, on which sum the city is paying—as the money was borrowed—about 4 per cent. . . .

[Page 59.] The land in Winter Street, which was assessed at less than $4 per square foot in 1850, was assessed in 1907 at $130 per square foot. During the fifty-seven years intervening, the income, above taxes, from the land, in rent and appreciation has amounted to an average of 150 per cent. annually on the investment of 1850. . . .

Ratio of buildings to land [page 62]. Massachusetts has

fourteen counties. In every one of thirteen of these counties the assessed value of the buildings exceeds and in most cases largely exceeds the assessed value of the land. In the one other county, Suffolk (Boston, Chelsea, Revere, and Winthrop), containing 49 per cent. of the whole land value of the state, the buildings fall far below the land in value.

Again, eighty-eight towns (out of Massachusetts' 354 cities and towns), having lowest valuations, show average assessments as follows: Of buildings, $130,000; of land, $145,000. . . . The following figures show Winter Street in company with the three smallest towns:

	Buildings.	Land.	Ratio.
Mashpee	$ 46,530	$ 140,020	33–100
Peru	22,680	84,825	27–100
Florida	30,790	119,246	25–100
Winter St., Boston.	605,200	8,272,000	7–100

For the county of Suffolk, which contains the city of Boston, as well as for the State, no such discrepancy appears. Following are the figures:

	Buildings.	Land.	Ratio.
County of Suffolk..	$ 444,441,725	$ 673,208,750	66–100
Other 13 counties..	949,283,781	679,071,599	140–100
Whole state.....	1,393,725,486	1,352,280,349	101–100

In the twelve following large cities and towns the value of the buildings greatly exceeds that of the land.

	Buildings.	Land.	Ratio.
Lenox	$ 2,306,500	$ 1,731,375	133–100
Pittsfield	8,685,715	6,971,255	124–100
North Attleborough	2,411,210	1,256,613	191–100
Gloucester	9,388,650	7,886,470	119–100
Haverhill	12,392,960	9,772,050	126–100
Lawrence	22,854,800	18,587,850	123–100
Lynn	29,892,705	23,238,785	128–100
Holyoke	18,194,860	15,456,380	117–100
Springfield	37,188,415	36,131,445	103–100
Cambridge	49,245,700	39,989,600	123–100
Lowell	33,293,590	26,389,020	126–100
Newton	27,590,325	22,878,475	120–100
Total	253,445,430	210,289,318	120–100

In the following seventeen cities and towns, representative of their class, the valuation of the buildings is in the average double that of the land:

	Buildings.	Land.	Ratio.
Athol	$ 2,324,908	$ 1,204,097	193–100
Clinton	4,246,230	1,967,307	215–100
Abington	1,749,697	634,610	275–100
Plymouth	5,477,025	2,206,250	248–100
Amherst	1,839,225	899,535	204–100
Chicopee	6,115,900	2,221,270	275–100
Amesbury	2,841,815	1,397,681	203–100
Newburyport	5,269,850	2,379,681	221–100
Adams	2,598,950	1,085,300	239–100
North Adams	7,257,210	4,827,075	150–100
Attleborough	5,479,385	3,474,395	158–100
Taunton	11,024,365	5,214,520	211–100
Easthampton	3,412,906	408,720	836–100
Rockland	2,346,350	891,323	263–100
Chelsea	14,600,570	8,922,300	163–100
Blackstone	1,244,065	760,410	163–100
Gardner	3,767,096	1,395,618	270–100
Total	81,595,727	39,890,011	205–100

Another illustration [page 86]. The St. Paul's Church property on Tremont Street, Boston, standing between two large stores, furnishes another good illustration of what we have been saying and reiterating.

Less than ten years ago $1,500,000 was offered for this property for business purposes, and the offer was declined. Since then the assessed valuations of the adjacent Tremont Street estates between Winter Street and Temple Place have increased more than 75 per cent. In view of these facts it should be very conservative to estimate to-day:

The value of St. Paul's Church property at	$2,000,000
For this value the St. Paul Society paid in 1820	100,000
The people of Boston have since contributed by their aggregate and particular activities, industries and expenditures	1,900,000
An annual contribution for 87 years of much above	20,000
But, in recent years, this increase in value has been at the annual rate of not less than	75,000

Church property being exempt from taxation, the people of Boston have to make up the amount of the exemption. This, in the case of St. Paul's is $22,500, and for all church property in the city is $385,000, a year.	
If then to the above average annual contribution of the public there be added these taxes for 1907, more than....	22,000
The total annual contribution amounts to.....	97,000

An amount equal to the 5 per cent. ground rent of almost $2,000,000 worth of land, or to the taxes, at $15.90 per thousand, on $6,100,000 worth of property! . . .

The undervaluation of urban or village land [page 125]. A few illustrations will show how this potential agency, ground rent, escapes observation both in small and large towns, and in small cities as well.

In the following illustrative examples, the ratio between assessed valuation and actual net value of land, as indicated by actual rentals, is calculated by deducting from the net income of the entire estate (i.e., total income less taxes) an amount equal to 10 per cent. of the assessed valuation of the buildings, to cover interest, insurance, repairs, and depreciation. Twenty-five specimen estates in Lawrence, Scituate, Clinton, and Whitman, Mass., show ratios, thus calculated, as follows:

25 estates . . . average tax rate per thousand.....		$16.85
Assessed valuation	Land	$ 197,828
	Buildings	236,955
	Total	434,783
Gross rental of properties actually received by the owners..		56,067
Taxes (on $434,783, at $16.85 per thousand).....		7,325
Net rental after paying all taxes.....		48,742
Less 10 per cent. on buildings ($236,955) for interest, insurance, repairs, and depreciation.....		23,695
Net income from land alone (equaling 12 per cent. on $197,828)		25,047
This income is 5 per cent. return on an indicated net value of at least.....		500,940
Instead of less than 40 per cent. of that amount, or the amount at which the land is assessed.....		197,828

Leaving out the city of Lawrence, the ratio for the three smaller communities of Scituate, Clinton, and Whitman averages only 30 per cent.

The figures for the above twenty-five estates in detail are as follows:

In Lawrence, a cotton manufacturing city of 70,000 inhabitants, of seven estates the several assessed valuations were respectively 72, 67, 62, 48, 42, 38, and 15 per cent. of the net value. The average valuation was 48 per cent. of the net land value.

In Scituate, Mass., a shore town of 2600 inhabitants, of four estates the several assessed valuations were respectively 52½, 50, 48, and 13 per cent. of the net value. The average assessed valuation was 37½ per cent. of the net land value.

In Clinton, a manufacturing town of 13,000 inhabitants, of five estates the several assessed valuations were respectively 38, 37, 34½, 27½, and 22½ per cent. of the net value. The average assessed valuation was 32 per cent. of the net land value.

In Whitman, a shoe manufacturing town of 6500 inhabitants, of nine estates the several assessed valuations were respectively 83, 62, 45½, 43, 32, 27, 23, 19, and 14 per cent. of the net value. The average assessed valuation was 21 per cent. of the net land value. . . .

The minor importance of agricultural rent [page 129]. The Massachusetts valuations for 1907 offer a market illustration. . . .

Assessed valuations.	Land.	Buildings.	Total.
33 cities.....	$1,088,329,177	$ 998,896,745	$ 2,087,225,922
37 large towns.....	139,965,083	178,810,787	318,775,870
70 cities and towns.	1,228,294,260	1,177,707,532	2,406,001,792
284 small towns.....	123,986,089	216,017,954	340,004,043
354 cities and towns	1,352,280,349	1,393,725,486	$2,746,005,835

Thus the land valuations of the 284 small towns ($123,986,089) and of the 70 cities and large towns ($1,228,294,260)

are seen to be about in the ratio of one to ten. Nor must it be overlooked, that there is a larger proportion of urban property in small towns [1] than of farm property in the large ones. The State census, which gives farm values by themselves, corroborates the above estimate.

[1] [The Western reader may observe that the New England "small town" is a township, largely rural.—Ed.]

THE NEW YORK EXCHANGES

[Governor Charles E. Hughes appointed in December, 1908, a committee consisting of business men and bankers and the economist, John B. Clark, which was known as "the Governor's commission on speculation in securities and commodities." Its instructions were to endeavor to ascertain "what changes, if any, are advisable in the laws of the State, bearing upon speculation in securities and commodities, or relating to the protection of investors, or with regard to the instrumentalities and organizations used in dealings in securities and commodities which are the subject of speculation." The committee reported June 7, 1909. The following extracts give the greater part of the description of the exchanges and of their actual operations. The parts omitted pertain very largely to foreign experience, to the Committee's opinions as to the morality and harmfulness of the operations, and to the recommendations of reformative legislation. The latter are summarized at the end of the extract.]

In New York City there are two exchanges dealing in securities and seven in commodities. In addition there is a security market, without fixed membership or regular officers, known as the "Curb." The exchanges dealing in commodities are incorporated, while those dealing in securities are not. . . .

The New York Stock Exchange. The New York Stock Exchange is a voluntary association, limited to 1100 members, of whom about 700 are active, some of them residents of other cities. Memberships are sold for about $80,000. The Exchange as such does no business, merely providing facilities to members and regulating their conduct. The governing power is an elected committee of forty members and is plenary in scope. The business transacted on the floor is the purchase and sale of stocks and bonds of corporations and governments. Practically all transactions must be completed by delivery and payment on the following day.

The mechanism of the Exchange, provided by its consti-

tution and rules, is the evolution of more than a century. An organization of stockbrokers existed here in 1792, acquiring more definite form in 1817. It seems certain that for a long period the members were brokers or agents only; at the present time many are principals as well as agents, trading for themselves as well as for their customers. A number of prominent capitalists hold memberships merely for the purpose of availing themselves of the reduced commission charge which the rules authorize between members.

The volume of transactions indicates that the Exchange is to-day probably the most important financial institution in the world. In the past decade the average annual sales of shares have been 196,500,000 at prices involving an annual average turnover of nearly $15,500,000,000; bond transactions averaged about $800,000,000. This enormous business affects the financial and credit interests of the country in so large a measure that its proper regulation is a matter of transcendent importance. While radical changes in the mechanism, which is now so nicely adjusted that the transactions are carried on with the minimum of friction, might prove disastrous to the whole country, nevertheless measures should be adopted to correct existing abuses.

Patrons of the Exchange. The patrons of the Exchange may be divided into the following groups:

(1) Investors, who personally examine the facts relating to the value of securities or act on the advice of reputable and experienced financiers, and pay in full for what they buy.

(2) Manipulators, whose connection with corporations issuing or controlling particular securities enables them under certain circumstances to move the prices up or down, and who are thus in some degree protected from dangers encountered by other speculators.

(3) Floor traders, who keenly study the markets and the general conditions of business, and acquire early information concerning the changes which affect the values of securities. From their familiarity with the technique of dealings on the

Exchange, and ability to act in concert with others, and thus manipulate values, they are supposed to have special advantages over other traders.

(4) Outside operators having capital, experience, and knowledge of the general conditions of business. Testimony is clear as to the result which, in the long run, attends their operations; commissions and interest charges constitute a factor always working against them. Since good luck and bad luck alternate in time, the gains only stimulate these men to larger ventures, and they persist in them till a serious or ruinous loss forces them out of the "Street."

(5) Inexperienced persons, who act on interested advice, "tips," advertisements in newspapers, or circulars sent by mail, or "take flyers" in absolute ignorance, and with blind confidence in their luck. Almost without exception they eventually lose.

Marginal trading. It is unquestionable that only a small part of the transactions upon the Exchange is of an investment character; a substantial part may be characterized as virtually gambling. . . . Two practices are prolific of losses, namely, buying active securities on small margins and buying unsound securities, paying for them in full. The losses in the former case are due to the quick turns in the market, to which active stocks are subject; these exhaust the margins and call for more money than the purchasers can supply. The losses in the latter case are largely due to misrepresentations of interested parties and unscrupulous manipulations. . . . "Pyramiding," . . . is the use of paper profits in stock transactions as a margin for further commitments. . . . The practice tends to produce more extreme fluctuations and more rapid wiping out of margins. . . .

Short-selling. Contracts and agreements to sell, and deliver in the future, property which one does not possess at the time of the contract, are common in all kinds of business. The man who has "sold short" must some day buy in order to return the stock which he has borrowed to make the short sale.

Short-sellers endeavor to select times when prices seem low in order to buy, their action in both cases serving to lessen advances and diminish declines of price. In other words, short-selling tends to produce steadiness in prices, which is an advantage to the community. No other means of restraining unwarranted marking up and down of prices has been suggested to us. . . .

Manipulation of prices. A subject to which we have devoted much time and thought is that of the manipulation of prices by large interests. This falls into two general classes:

(1) That which is resorted to for the purpose of making a market for issues of new securities.

(2) That which is designed to serve merely speculative purposes in the endeavor to make a profit as the result of fluctuations which have been planned in advance.

The first kind of manipulation has certain advantages, and when not accompanied by "matched orders" is unobjectionable *per se*. It is essential to the organization and carrying through of important enterprises, such as large corporations, that the organizers should be able to raise the money necessary to complete them. This can be done only by the sale of securities. Large blocks of securities, such as are frequently issued by railroad and other companies, cannot be sold over the counter or directly to the ultimate investor, whose confidence in them can, as a rule, be only gradually established. They must therefore, if sold at all, be disposed of to some syndicate who will in turn pass them on to middlemen or speculators, until, in the course of time, they find their way into the boxes of investors. But prudent investors are not likely to be induced to buy securities which are not regularly quoted on some exchange, and which they cannot sell, or on which they cannot borrow money at their pleasure. If the securities are really good and bids and offers *bona fide*, open to all sellers and buyers, the operation is harmless. It is merely a method of bringing new investments into public notice.

The second kind of manipulation mentioned is undoubtedly open to serious criticism. It has for its object either the creation of high prices for particular stocks, in order to draw in the public as buyers and to unload upon them the holdings of the operators, or to depress the prices and induce the public to sell. There have been instances of gross and unjustifiable manipulation of securities, as in the case of American Ice stock. . . .

"Wash sales" and "matched orders." In the foregoing discussion we have confined ourselves to *bona fide* sales. . . . Fictitious or so-called "wash sales," . . . are forbidden by the rules of all the regular exchanges, and are not enforceable at law. They are less frequent than many persons suppose. A transaction must take place upon the floor of the Exchange to be reported, and if not reported does not serve the purpose of those who engage in it. If it takes place on the floor of the Exchange, but is purely a pretense, the brokers involved run the risk of detection and expulsion, which is to them a sentence of financial death. There is, however, another class of transactions called "matched orders," which differ materially from those already mentioned, in that they are actual and enforceable contracts. We refer to that class of transactions, engineered by some manipulator, who sends a number of orders simultaneously to different brokers, some to buy and some to sell. These brokers, without knowing that other brokers have countervailing orders from the same principal, execute their orders upon the floor of the Exchange, and the transactions become binding contracts; they cause an appearance of activity in a certain security which is unreal. . . .

Listing requirements. Before securities can be bought and sold on the Exchange, they must be examined. The committee on stock list is one of the most important parts of the organization, since public confidence depends upon the honesty, impartiality, and thoroughness of its work. While the

Exchange does not guarantee the character of any securities, or affirm that the statements filed by the promoters are true, it certifies that due diligence and caution have been used by experienced men in examining them. Admission to the list, therefore, establishes a presumption in favor of the soundness of the security so admitted. Any securities authorized to be bought and sold on the Exchange, which have not been subjected to such scrutiny, are said to be in the unlisted department, and traders who deal in them do so at their own risk. . . .

Wall Street as a factor. There is a tendency on the part of the public to consider Wall Street and the New York Stock Exchange as one and the same thing. This is an error arising from their location. We have taken pains to ascertain what proportion of the business transactions on the Exchange is furnished by New York City. The only reliable sources of information are the books of the commission houses. An investigation was made of the transactions on the Exchange for a given day, when the sales were 1,500,000 shares. The returns showed that on that day 52 per cent. of the total transactions on the Exchange apparently originated in New York City, and 48 per cent. in other localities.

The Consolidated Stock Exchange. The Consolidated Exchange was organized as a mining stock exchange in 1875, altering its name and business in 1886. Although of far less importance than the Stock Exchange, it is nevertheless a secondary market of no mean proportions; by far the greater part of the trading is in securities listed upon the main exchange, and the prices are based upon the quotations made there. The sales average about 45,000,000 shares per annum. The fact that its members make a speciality of "broken lots," i.e., transactions in shares less than the 100 unit, is used as a ground for the claim that it is a serviceable institution for investors of relatively small means. But it is obvious that its utility as a provider of capital for enterprises is exceed-

ingly limited; and that it affords facilities for the most injurious form of speculation—that which attracts persons of small means.

It also permits dealing in shares not listed in the main exchange, and in certain mining shares, generally excluded from the other. In these cases it prescribes a form of listing requirements, but the original listing of securities is very rarely availed of. The rules also provide for dealing in grain, petroleum, and other products. Wheat is, however, at present the only commodity actively dealt in, and this is due solely to the permission to trade in smaller lots than the Produce Exchange unit of 5,000 bushels.

There are 1225 members, about 450 active, and the memberships have sold in recent years at from $650 to $2000. In general the methods of conducting business are similar to those of the larger exchange, and subject to the same abuses.

Very strained relations have existed between the two security exchanges since the lesser one undertook in 1886 to deal in stocks. The tension has been increased by the methods by which the Consolidated obtains the quotations of the other, through the use of the "tickers" conveying them. It is probable that without the use of these instruments the business of the Consolidated Exchange would be paralyzed; yet the right to use them rests solely upon a technical point in a judicial decision which enjoins their removal. . . .

The Curb Market. There is an unorganized stock market held in the open air during exchange hours. It occupies a section of Broad Street. An enclosure in the center of the roadway is made by means of a rope, within which the traders are supposed to confine themselves, leaving space on either side for the passage of street traffic; but during days of active trading the crowd often extends from curb to curb.

There are about 200 subscribers, of whom probably 150 appear on the curb each day, and the machinery of the operations requires the presence of as many messenger boys and clerks. Such obstruction of a public thoroughfare is obviously

illegal, but no attempt has been made by the city authorities to disperse the crowd that habitually assembles there.

This open-air market, we understand, is dependent for the great bulk of its business upon members of the Stock Exchange, approximately 85 per cent. of the orders executed on the curb coming from Stock Exchange houses. The Exchange itself keeps the curb market in the street, since it forbids its own members engaging in any transaction in any other security exchange in New York. If the curb were put under a roof and organized, this trading could not be maintained.

Its utility. The curb market has existed for upwards of thirty years, but only since the great development of trading in securities began, about the year 1897, has it become really important. It affords a public market-place where all persons can buy and sell securities which are not listed on any organized exchange. Such rules and regulations as exist are agreed to by common consent, and the expenses of maintenance are paid by voluntary subscription. An agency has been established by common consent through which the rules and regulations are prescribed.

This agency consists solely of an individual who, through his long association with the curb, is tacitly accepted as arbiter. From this source we learn that sales recorded during the year 1908 were roughly as follows:

Bonds	$66,000,000
Stocks, industrials, shares	4,770,000
Stocks, mining, shares	41,825,000

Official quotations are issued daily by the agency and appear in the public press. Corporations desiring their securities to be thus quoted are required to afford the agency certain information, which is, however, superficial and incomplete. There is nothing on the curb which corresponds to the listing process of the Stock Exchange. The latter, while not guaranteeing the soundness of the securities, gives a *prima facie* character to those on the list, since the stock-list committee takes some pains to learn the truth. The de-

cisions of the agent of the curb are based on insufficient data, and since much of the work relates to mining schemes in distant States and Territories, and foreign countries, the mere fact that a security is quoted on the curb should create no presumption in its favor; quotations frequently represent "wash sales," thus facilitating swindling enterprises.

Evils of unorganized status. Bitter complaints have reached us of frauds perpetrated upon confiding persons, who have been induced to purchase mining shares because they are quoted on the curb; these are frequently advertised in newspapers and circulars sent through the mails as so quoted. Some of these swindles have been traced to their fountain heads by the Post-office Department, to which complaint has been made; but usually the swindler, when cornered, has settled privately with the individual complainant, and then the prosecution has failed for want of testimony. Meanwhile the same operations may continue in many other places, till the swindle becomes too notorious to be profitable.

Notwithstanding the lack of proper supervision and control over the admission of securities to the privilege of quotation, some of them are meritorious, and in this particular the curb performs a useful function. The existence of the cited abuses does not, in our judgment, demand the abolition of the curb market. Regulation is, however, imperative. To require an elaborate organization similar to that existing in the Exchanges would result in the formation of another curb free from such restraint.

As has been stated, about 85 per cent. of the business of the curb comes through the offices of members of the New York Stock Exchange, but a provision of the constitution of that exchange prohibits its members from becoming members of, or dealing on, any other *organized* stock exchange in New York. Accordingly, operators on the curb market have not attempted to form an organization. The attitude of the Stock Exchange is therefore largely responsible for the existence of such abuses as result from the want of organization of the curb

market. The brokers dealing on the latter do not wish to lose their best customers, and hence they submit to these irregularities and inconveniences.

Responsibility of the Exchange. Some of the members of the Exchange dealing on the curb have apparently been satisfied with the prevailing conditions, and in their own selfish interests have maintained an attitude of indifference toward abuses. We are informed that some of the most flagrant cases of discreditable enterprises finding dealings on the curb were promoted by members of the New York Stock Exchange. The present apparent attitude of the Exchange toward the curb seems to us clearly inconsistent with its moral obligations to the community at large. Its governors have frequently avowed before the committee a purpose to coöperate to the greatest extent for the remedy of any evils found to exist in stock speculation. The curb market as at present constituted affords ample opportunity for the exercise of such helpfulness. . . .

Bucket shops. Bucket shops are ostensibly brokerage offices, where, however, commodities and securities are neither bought nor sold in pursuance of customer's orders, the transactions being closed by the payment of gains or losses, as determined by price quotations. In other words, they are merely places for the registration of bets or wagers; their machinery is generally controlled by the keepers, who can delay or manipulate the quotations at will.

The law of this State, which took effect September 1, 1908, makes the keeping of a bucket shop a felony, punishable by fine and imprisonment, and in the case of corporations, on second offenses by dissolution or expulsion from the State. In the case of individuals the penalty for the second offense is the same as for the first. These penalties are imposed upon the theory that the practice is gambling; but in order to establish the fact of gambling it is necessary, under the New York law, to show that both parties to the trade intended that it should be settled by the payment of differences, and not by

delivery of property. Under the law of Massachusetts it is necessary to show only that the bucket-shop keeper so intended. The Massachusetts law provides heavier penalties for the second offense than for the first, and makes it a second offense if a bucket shop is kept open after the first conviction. . . . There has been a sensible diminution in the number of bucket shops in New York since the act of 1908 took effect, but there is still much room for improvement.

Continuous quotations of prices from an exchange are indispensable to a bucket shop, and when such quotations are cut off this gambling ends; therefore every means should be employed to cut them off. . . .

The major commodity exchanges. Of the seven commodity exchanges of New York, three dealing with produce, cotton, and coffee are classed as of major importance; two organized by dealers in fruit and hay, are classed as minor; and two others, the Mercantile (concerned with dairy and poultry products) and the Metal (concerned with mining products) are somewhat difficult of classification, as will appear hereafter. The business transacted on the three major exchanges is mainly speculative, consisting of purchases and sales for future delivery either by those who wish to eliminate risks or by those who seek to profit by fluctuations in the value of products. "Cash" or "spot" transactions are insignificant in volume.

The objects, as set forth in the charters, are to provide places for trading, establish equitable trade principles and usages, obtain and disseminate useful information, adjust controversies, and fix by-laws and rules for these purposes.

Trading in differences of price and "wash sales" are strictly prohibited under penalty of expulsion. All contracts of sale call for delivery, and unless balanced and cancelled by equivalent contracts of purchase, must be finally settled by a delivery of the merchandise against cash payment of its value as specified in the terms of the contract; but the actual delivery may be waived by the consent of both

parties. Possession is for the most part transferred from the seller to the purchaser by warehouse receipts entitling the holder to the ownership of the goods described.

Dealing in "futures." The selling of agricultural products for future delivery has been the subject of much controversy in recent years. A measure to prohibit such selling, known as the Hatch Anti-Option Bill, was debated at great length in Congress during the years 1892, 1893 and 1894. Although it passed both House and Senate in different forms, it was finally abandoned by common consent. Similar legislation in Germany has proved injurious; and when attempted by our States it has either resulted detrimentally or been inoperative. The subject was exhaustively considered by the Industrial Commission of Congress which in 1901 made an elaborate report (volume VI), showing that selling for future delivery, based upon a forecast of future conditions of supply and demand, is an indispensable part of the world's commercial machinery, by which prices are, as far as possible, equalized throughout the year to the advantage of both producer and consumer. The subject is also treated with clearness and impartiality in the Cyclopedia of American Agriculture, in an article on "Speculation and Farm Prices"; where it is shown that since the yearly supply of wheat, for example, matures within a comparatively short period of time somebody must handle and store the great bulk of it during the interval between production and consumption. Otherwise the price will be unduly depressed at the end of one harvest and correspondingly advanced before the beginning of another.

Buying for future delivery causes advances in prices; selling short tends to restrain inordinate advances. In each case there must be a buyer and a seller and the interaction of their trading steadies prices. Speculation thus brings into the market a distinct class of people possessing capital and special training who assume the risks of holding and distributing the proceeds of the crops from one season to

another with the minimum of cost to producer and consumer.

Hedging. A considerable part of the business done by these exchanges consists of "hedging." This term is applied to the act of a miller, for example, who is under contract to supply a given quantity of flour monthly throughout the year. In order to insure himself against loss he makes a contract with anybody whom he considers financially responsible to supply him wheat at times and in the quantities needed. He "hedges" against a possible scarcity and consequent rise in the price of wheat. If the miller were restricted in his purchases to persons in the actual possession of wheat at the time of making the contract he would be exposed to monopoly prices. If the wheat producer were limited in his possibilities of sale to consumers only, he would be subjected to the depressing effects of a glut in the market in June and September, at times of harvest.

To the trader, manufacturer, or exporter, the act of transferring the risk of price fluctuations to other persons who are willing to assume it, has the effect of an insurance. It enables him to use all of his time and capital in management of his own business instead of devoting some part of them to contingencies arising from unforeseen crop conditions.

Alternative contracts, margins, settlements. In order to eliminate the risk of a shortage of specific grades of the merchandise thus traded in, contracts generally permit the delivery of alternative grades, within certain limits, at differential prices; and if the grade to be delivered be not suitable for the ultimate needs of the purchaser, it can under ordinary circumstances be exchanged for the grade needed, by the payment of the differential. It is true that in this exchange of grades there is sometimes a loss or a profit, owing to some unexpected diminution or excess of supply of the particular grade wanted, due to the weather or other natural causes.

Deposits of cash margins may be required mutually by members at the time of making contracts, and subsequent

additional ones if market fluctuations justify. Dealings for outsiders are usually upon a 10 per cent. margin; obviously if this margin were increased generally, say to 20 per cent., a considerable part of the criticism due to losses in speculation, particularly as to the Cotton Exchange, would be eliminated.

The major part of the transactions are adjusted by clearing systems, the method most prevalent being "ring settlements," by which groups of members having buying and selling contracts for identical quantities offset them against each other, canceling them upon the payment of the differences in prices.

The Produce Exchange. The New York Produce Exchange was chartered by the Legislature in 1862, under the style of the "New York Commercial Association." The charter has been amended several times; in 1907 dealing in securities, as well as in produce, was authorized. There are over 2000 members, but a large number are inactive. Some members are also connected with the Stock and Cotton Exchanges. The business includes dealing in all grains, cottonseed oil, and a dozen or more other products; wheat is, however, the chief subject of trading, and part thereof consists of hedging by and for millers, exporters, and importers, both here and abroad. The quantity of wheat received in New York in the five years 1904–1908 averaged 21,000,000 bushels annually. No record of "cash" sales is kept. The reported sales of "futures" show in five years an annual average of 480,000,000 bushels, the year 1907 showing 610,000,000. Although some of these sales were virtually bets on price differences, all of them were contracts enforceable at law. . . .

The Cotton Exchange. The New York Cotton Exchange was incorporated by a special charter in 1871. Its membership is limited to 450. It is now the most important cotton market in the world, as it provides the means for financing about 80 per cent. of the crop of the United States and is the intermediary for facilitating its distribution. In fact, it

is the world's clearing house for the staple. Traders and manufacturers in Japan, India, Egypt, Great Britain, Germany, France, and Spain, as well as the United States, buy and sell here daily and the business is still increasing.

Cotton is the basis of the largest textile industry in the world. The business is conducted on a gigantic scale in many countries, by means of vast capital, complicated machinery, and varied processes involving considerable periods of time between the raw material and the finished product. Selling for future delivery is necessary to the harmonious and uninterrupted movement of the staple from producer to consumer. Nearly all the trading, beginning with that of the planter, involves short selling. The planter sells to the dealer, the dealer to the spinner, the spinner to the weaver, the weaver to the cloth merchant, before the cotton of any crop year is picked. Dealers who take the risk of price fluctuations insure all the other members of this trading chain against losses arising therefrom and spare them the necessity of themselves being speculators in cotton. The risks connected with raising and marketing cotton must be borne by some one, and this is now done chiefly by a class who can give their undivided attention to it.

Grading cotton. The grading of cotton is the vital feature of the trade. When no grade is specified in the contract, it is construed to be middling. There are now eighteen grades ranging from middling stained up to fair. This classification differs somewhat from that of other markets, and last January the Department of Agriculture at Washington took up the subject of standardizing the various grades for all American markets. The New York Cotton Exchange participated in this work; a standard was thus adopted, the types of which were supplied by its classification committee. It varies but little from the one previously in use here. The samples chosen to represent the several types are now sealed, in possession of the Department of Agriculture, awaiting the action of Congress.

The cotton plant is much exposed to vicissitudes of the weather. A single storm may change the grade of the crop in large sections of the country. It becomes necessary therefore to provide some protection for traders who have made contracts to deliver a particular grade which has become scarce by an accident which could not be foreseen. For this purpose alternative deliveries are allowed by the payment of corresponding price differentials, fixed by a committee of the Exchange twice annually, in the months of September and November.

Settlements, sales, speculation. Settlements of trades may be made individually, or by groups of members, or through a clearing system, the agency of which is a designated bank near the Exchange. No record is kept of the transactions, but it is probable that for a series of years the sales have averaged fully 50,000,000 bales annually. There have been in the past instances of excessive and unreasonable speculation upon the Cotton Exchange, notably the Sully speculation of 1904. We believe that there is also a great deal of speculation of the gambling type. . . .

The Coffee Exchange. The Coffee Exchange was incorporated by special charter in 1885. It has 320 members, about 80 per cent. active. It was established in order to supply a daily market where coffee could be bought and sold and to fix quotations therefor, in distinction from the former method of alternate glut and scarcity, with wide variations in price—in short, to create stability and certainty in trading in an important article of commerce. This it has accomplished; and it has made New York the most important primary coffee market in the United States. But there has been recently introduced a non-commercial factor known as "valorization," a governmental scheme of Brazil, by which the public treasury has assumed to purchase and hold a certain percentage of the coffee grown there, in order to prevent a decline of the price. This has created abnormal conditions in the coffee trade.

All transactions must be reported by the seller to the

superintendent of the Exchange, with an exact statement of the time and terms of delivery. The record shows that the average annual sales in the past five years have been in excess of 16,000,000 bags of 250 pounds each.

Contracts may be transferred or offset by voluntary clearings by groups of members. There is no general clearing system. There is a commendable rule providing that, in case of a "corner," the officials may fix a settlement price for contracts to avoid disastrous failures.

The other exchanges. Of the exchanges which we have classed as minor, those dealing with fruit and hay appear to be in nowise concerned with speculation. No sales whatever are conducted on them, all transactions being consummated either in the places of business of the members or at public auction to the highest bidder. No quotations are made or published.

In the case of the other two commodity exchanges, the Mercantile and the Metal, new problems arise. Although quotations of the products appertaining to these exchanges are printed daily in the public press, they are not a record of actual transactions amongst members, either for immediate or future delivery.

It is true that on the Mercantile Exchange there are some desultory operations in so-called future contracts in butter and eggs, the character of which is, however, revealed by the fact that neither delivery by the seller nor acceptance by the buyer is obligatory; the contract may be voided by either party by payment of a maximum penalty of 5 per cent. There are nominal "calls" but trading is confessedly rare. The published quotations are made by a committee, the membership of which is changed periodically. That committee is actually a close corporation of the buyers of butter and eggs, and the prices really represent their views as to the rates at which the trade generally should be ready to buy from the farmers and country dealers.

Similar, but equally deceptive, is the method of making

quotations on the Metal Exchange. In spite of the apparent activity of dealings in this organization in published market reports, there are no actual sales on the floor of the Metal Exchange, and we are assured that there have been none for several years. Prices are, however, manipulated up and down by a quotation committee of three, chosen annually, who represent the great metal selling agencies as their interest may appear, affording facilities for fixing prices on large contracts, mainly for the profit of a small clique, embracing, however, some of the largest interests in the metal trade.

These practices result in deceiving buyers and sellers. The making and publishing of quotations for commodities or securities by groups of men calling themselves an exchange, or by any other similar title, whether incorporated or not, should be prohibited by law, where such quotations do not fairly and truthfully represent any *bona fide* transactions on such exchanges. Under present conditions, we are of the opinion that the Mercantile and Metal Exchanges do actual harm to producers and consumers, and that their charters should be repealed.

Some conclusions.[1] Commodities are not held for permanent investment, but are bought and sold primarily for the purpose of commercial distribution; on the other hand, securities are primarily held for investment; but both are subjects of speculation. Speculation consists in forecasting changes of value and buying or selling in order to take advantage of them; it may be wholly legitimate, pure gambling, or something partaking of the qualities of both. In some form it is a necessary incident of productive operations. When carried on in connection with either commodities or securities it tends to steady their prices. Where speculation is free, fluctuations in prices, otherwise violent and disastrous, ordinarily become gradual and comparatively harmless. Moreover, so far as commodities are concerned, in the absence

[1] [The following general views of the Commission are given near the beginning of the report, p. 3.]

of speculation, merchants and manufacturers would themselves be forced to carry the risks involved in changes of prices and to bear them in the intensified condition resulting from sudden and violent fluctuations in value. Risks of this kind which merchants and manufacturers still have to assume are reduced in amount, because of the speculation prevailing; and many of these milder risks they are enabled, by "hedging," to transfer to others. For the merchant or manufacturer the speculator performs a service which has the effect of insurance.

In law, speculation becomes gambling, when the trading which it involves does not lead, and is not intended to lead, to the actual passing from hand to hand of the property that is dealt in. . . .

The problem to be solved. The problem wherever speculation is strongly rooted is to eliminate that which is wasteful and morally destructive, while retaining and allowing free play to that which is beneficial. The difficulty in the solution of the problem lies in the practical impossibility of distinguishing what is virtually gambling from legitimate speculation. The most fruitful policy will be found in measures which will lessen speculation by persons not qualified to engage in it. In carrying out such a policy exchanges can accomplish more than legislatures.

[The conclusions of the committee were "directed to the removal of various evils," and "to the reduction of the volume of speculation of the gambling type." The committee repeatedly emphasizes the difficulty of distinguishing by law between proper and improper practices. It is impressed with the results of the German law of 1896 which failed to reach the abuses and which was modified and largely repealed by the law of 1908. The committee repeatedly declares that the exchange, with plenary power over members and their operations, could provide correctives and should do so. While it makes a few specific recommendations for legislation, the conclusions are in large part negative and conservative, as compared with popular views on the subject.]

DIFFERENCES IN EFFICIENCY OF WEAVERS

[The Tariff Board, in the study of the cost of producing woolen cloths, observed in the weavers widely "varying degrees of efficiency in the same class of goods (exclusive of learners)." A letter was sent to manufacturers, asking: "What is wrong in the mental or physical makeup or application of the inefficient weavers and on the other hand what are the qualifications of good weavers?"

The replies, a portion of which are here given, may be taken as throwing light on the differences in the efficiency of workers in general, whether in the same trade, or in different trades. (Report of Tariff Board on Schedule K, transmitted to Congress, Dec. 20, 1911. Printed for the use of the Committee on Finance. Selections from pp. 1065–1074.)]

Establishment No. 1. The loom is seldom out of order and is generally fixed within a very short time, an hour or two at the most. The warp and filling having been made in large lots in our worsted mill will run exactly as well in one loom as in another. The weaver varies. Some weavers have that peculiar knack of watching their warp and putting their bobbins in the shuttles carefully, and always alert to notice anything that is going wrong, and are onto the many tricks of the trade that make their work run easily. Others are careless, cannot do any of the many little things that make their work run easily, and hence have to do a great deal more stopping than a good weaver. At one time we had a young woman who did more and better work than any of the other men and women weavers in the mill. Quite often we do not have the proper loom to weave with the greatest efficiency certain cloths, but it would not pay us to change, as possibly the next orders might require that very loom to weave efficiently on.

Establishment No. 2. Most of our weavers are either persons too old to learn any new trade and have lost all ambition

and are perfectly content to jog along from day to day with not much worry for the future, or floaters, who drift from one mill to another, who will get off an exceptional week's production, but pay day will see them on the road once more, bound for some other town. Spinners are even more difficult to procure, and in brief labor conditions have reached a stage where we are forced to take any one who applies in order to keep our machinery running.

Establishment No. 3. It is more difficult to weed out the poor weavers in a mill located in a small community, as there is no waiting list to select from to fill their places, and vacancies are usually filled with learners, whereas in a larger place, having a number of weaving plants, it is practicable to insist on a maximum production, owing to the supply of experienced weavers near at hand to draw upon.

A good weaver—that is, one who can produce the maximum amount of good cloth—must be quick, with nimble fingers, good eyesight, clean and methodical, and anxious to earn and receive a good wage, and willing to pay the price by being on the job all the time. The poor weaver is sure to lack some of these qualifications.

Establishment No. 4. The weavers (and in fact all our employees) are not nearly as efficient and as steady as they were some years ago, and we do not get as good work as we used to. The new labor that we get is largely Polish, as compared with English, German, and Irish a few years since. The Polish are not nearly as good a class of help as the former, and they are not as well educated. Then, we have more changes of employees than we used to; consequently, we are continually breaking in new help, which tends greatly to reduce the efficiency.

Establishment No. 6. Under normal trade conditions there is a scarcity of good weavers, and help have to be taken on who are ignorant of our requirements, and thus more or less incompetent. Recognition of this fact has stimulated the adoption of automatic devices on looms for the prevention of

bad work. Many persons following the weaver's craft have missed their calling; nature intended them for other occupations; the deft hand and alert eye, so essential to successful weaving, are plainly lacking. They mean well, but their work gets ahead of them, and they spend their days in futile efforts to catch up; before one fault is corrected another appears, and it is from such operatives that most of the imperfect cloth comes.

Weavers in dress-goods mills, particularly where there are automatic looms, run more looms than in men's-wear mills, and when the latter are busy they draw heavily upon dress-goods organizations for their supply of weavers. In turn the dress-goods mills draw on the cotton mills for recruits, and it takes several months for a cotton-weaver to become a good worsted weaver. Meanwhile efficiency is not the highest.

The class of weavers is numerous that prefers easy, comfortable work with medium wages rather than work of higher grade and better pay. This lack of exertion and absence of ambition on their part tends to keep down efficiency.

The weavers do not all possess equal skill or physical power. In our employ are many weavers forty-five years and older, who are still producing good cloth, but whose product is being impaired by advancing years. Some of our most competent weavers are women twenty to thirty years of age, who right in the stage of their greatest efficiency relinquish their occupation and get married. In Europe weavers are more contented with their vocation and plan to remain in it all their lives. In numberless instances entire families for generations past have all been weavers, and such operatives acquire a measure of dexterity and skill which is not so fully met with in American mills. Neither is it the rule for young women to give up their mill occupation upon marriage; most of them continue their mill employment for several years after.

Establishment No. 9. As to the qualities of good weavers, it is hard to describe them. The essential qualities are alertness and dexterity, and as the work is not heavy, requir-

ing no great physical strength, women are often as good weavers as men, and sometimes better. Above all things, however, a weaver must have years of training in weaving all the different kinds of fabrics before he or she can really be called a good weaver. Under the hitherto prevalent violent fluctuations in the industry such life-long training has only been possible in very exceptional cases and in such places where local conditions have been more like those in Europe. This has again been brought to our special notice during the past summer. When the mill was running part time, many of our best and most energetic and ambitious workers, whom we had with great trouble educated for our special kind of work and who were dissatisfied at not making full wages, sought other industries. Now, when we are running full time again, we find we have only the poorer help and are almost in as bad a position as when we first started. It is impossible to repeat too often the great advantage possessed by the older European centers of the woolen and worsted industry. The operatives in those towns, even if they earn less than they might do elsewhere, will not break up their associations and move away as they do here. They are attached to their work and to their homes. Here the operatives have scarcely time to become domiciled before business is subjected to a violent setback and they are forced to seek work in other towns. The disadvantages of all this for mill owners are twofold: First, we thereby lose our best people, and secondly, upon the resumption of activity we have to break in new people again.

Establishment No. 10. Weaving is much more difficult than the average person who comes from the farms and rural districts, not only in this country but from foreign countries, anticipates; and the average that makes good is one in twelve.

As you will see by the names of all our employees they are very largely made up of foreigners, and to this we attribute the constant coming and going, as they come to this country

from stories they have been told that money is easy to make in America. There also are a great many positions open for them in which as much money can be earned without the same amount of brains or skill being necessary.

Establishment No. 15. In our opinion, what will make a good weaver will make a good workman in almost any line, especially mechanical. The good weaver has a "mechanical sense," which is lacking in a poor one. No doubt this is one reason why men are usually more efficient in weaving than women, who usually lack the "instinct for machinery," if it may be so called. A proof of this opinion is found in the fact that weavers as a class are less efficient now than they were ten years ago. This is certainly true in our plant and, we believe, in the industry generally. The reason for this is that the best weavers go into some other line of industry where the pay is better. Many of our "stars" of past years went into the wire-fence industry. Many more, during the past three or four years, have gone into the automobile industry, of which the center for the country is only fifty miles from us. Some of our weavers who have gone into this business have made good and are now drawing several times as much as they could ever have hoped for in weaving. . . .

It is invariably true that the weavers who turn off the most work in a given time also turn off the best work. The extremely slow and careful weavers are the ones who turn out the poor goods. Of course, in this statement we are referring only to the honest workman, not to those who have no pride in their work and run it out as fast as they can, regardless of results.

Establishment No. 20. There are first-class weavers, good weavers, fairly good weavers, and "also rans." Distinctly poor weavers, of course, we do not keep. It is just about as difficult to account for these degrees as it is to explain the difference in artists, machinists, carpenters, bricklayers, or baseball pitchers. Natural manual skill, vitality, a quick eye,

diligence, alertness, ambition, system, temperament—are all governing factors.

The good weaver never seems to be doing anything; the poor weaver always appears to be hard at work. The good weaver is quietly on the alert for things to happen; the poor weaver is always fussing around to catch up after they happen; consequently the good weaver not only produces more work but better work than the poor one.

CONSERVATION OF HUMAN LIFE

[The Report on National Vitality, Its Wastes and Conservation, prepared for the National Conservation Commission in 1908, by Irving Fisher, professor in Yale University, contained a brief summary of the arguments and material of the report. The following extract contains the greater portion of the summary of parts I, II and IV. The whole report was published as Bulletin 30 of the Committee of One Hundred on National Health.]

Part I.—*Length of life versus mortality.*

CHAPTER I—THE LENGTH OF LIFE

§ 1. *In different places.*—President Roosevelt has pointed out that the problem of conserving our natural resources is part of another and greater problem—that of national efficiency. This depends not only on physical environment, but on social environment, and most of all on human vitality. Modern hygiene is the reaction against the old fatalistic creed that deaths inevitably occur at a constant rate. The new motto is that of Pasteur: "It is within the power of man to rid himself of every parasitic disease."

It was once believed that human mortality followed an "inexorable law." Facts, however, show that mortality varies in different places and is decreasing as hygiene comes into use. The length of life in Sweden and Denmark is over fifty years; in the United States and England about forty-five; in India less than twenty-five.

§ 2. *At different times.*—In Europe, according to one authority, the length of life has increased in three hundred and fifty years from less than twenty to about forty years; in England, in less than half a century, it has increased about five years; in Prussia, in the last quarter of a century, over

six years; in America it has also increased, although good life tables are lacking excepting for insurance experience. The tables for Massachusetts for 1893-1897 show an average duration of life in that State of forty-five years, as compared with forty in 1855, and thirty-five, an estimate of 1789, based, however, on doubtful returns.

CHAPTER II—THE MORTALITY RATE.

§ 1. *Relation of longevity to mortality.*—As duration of life increases the death rate decreases. A death rate is the ratio of the number of deaths in a year to the population. Under normal conditions where the population is "stationary"—that is, neither increasing nor decreasing nor subject to immigration or emigration—the death rate and the duration of life are "reciprocals." In such a population, if the death rate is 20 per 1,000, the duration of life will be $1,000 \div 20 = 50$ years.

This relation, however, is disturbed in most countries today, and especially in America, by immigration and emigration and by the birth rate being in excess of the death rate. Nevertheless, death rates, if compared under similar conditions, furnish a fairly good index of vitality. They vary in different places and at different times.

§ 2. *Mortality in various regions.*—In the registration area of the United States the death rate is 16.5 per 1,000; in France it is 20; in India 42. In different States of the United States it varies from 14 in Michigan to 18 in New York.

§ 3. *Urban and rural mortality.*—The death rate is higher in the city than in the country, and the larger the city the higher the death rate. In European countries among the cities with the highest death rate are Dublin (40) and Moscow (37); among the lowest, Frankfort on the Main (16) and The Hague (16).

§ 4. *Race and condition.*—The colored death rate greatly exceeds the white. The death rate among the poor exceeds

that among the rich, being in Glasgow and Paris over twice as great.

§ 5. *Mortality historically.*—Death rates have been decreasing during several centuries. In London, where now the death rate is only 15, it was during the seventeenth and eighteenth centuries 40 to 50, and during 1680 to 1728, a period of pests, it rose as high as 80. Similar reduction has also been experienced in this country. In Habana the death rate after the American occupation fell from over 50 to about 20.

§ 6. *Adult and infant mortality.*—The greatest reduction has been effected among children, although the death rate is still undoubtedly high. Statistics show that during the last thirty years the death rate up to 50 years of age has decreased, but that beyond 50 it has remained almost stationary.

§ 7. *Particular diseases.*—The mortality from certain special diseases has greatly decreased. The tuberculosis death rate is now in England only one-third of what it was seventy years ago. The death rate from pneumonia now equals that of tuberculosis. Typhoid fever is decreasing. In Munich during 1856 the mortality was 291 per 100,000 of population. The city at that time contained many cesspools. After these were filled up the typhoid rate fell to 10 per 100,000 in 1887, making a reduction of 97 per cent. In Lawrence, Mass., after the public water was filtered in 1893 the typhoid-fever rate fell from 105 to 22. Doctor Kober has shown that death rates from typhoid fever are greatest in cities in which the rivers' waters are polluted, the average for these cities being 62, as compared with 18 for cities using unpolluted water of impounded and conserved streams. Doctor Rosenau concludes that any community having clean water and uninfected milk supply may be free from typhoid.

Smallpox has greatly decreased since vaccination has been employed. In Prussia the death rate per 100,000 from smallpox between 1846 and 1870 was 24. In 1874 vaccination was made compulsory, and the death rate for the years 1875–76 fell to 1.5. Similar figures can be given for other places. The

present outcry against vaccination is based on misinformation and on the general reasoning that it is unnatural to introduce a poison into the blood. Statistics show clearly that vaccination decreases smallpox and lengthens life. Even though it were shown that the virus is injurious, it would be the lesser of two evils.

Yellow fever in Philadelphia in 1793 caused the death of one-tenth of the city's population within six and one-half weeks. In 1900 it was found that a species of mosquito transmits this disease. The result of this applied knowledge is that the disease has practically disappeared in America.

PART II.—*Breadth of life versus invalidity.*

CHAPTER III—PREVALENCE OF SERIOUS ILLNESS.

§ 1. *Loss of time.*—Life is shortened by death and narrowed by invalidity. The ideal life, with respect to health, would be free from illness and disability of every kind. To approximate such an ideal is the aim of hygiene. It is usually true that the healthier a life the longer it will last. Humboldt maintained that he had lived four working lives by retaining a working power double the average for double the average number of years. According to Farr, for every death there is an average severe sickness of two years, or for each death per year there are two persons sick throughout the year. This would mean in the United States that, as there are about 1,500,000 annual deaths, there will always be about 3,000,000 persons on the sick list, which is equivalent to about thirteen days per capita.

§ 2. *Particular diseases.*—There are constantly ill in the United States of tuberculosis about 500,000 persons, of whom about one-half are totally incapacitated, while the remainder are half incapacitated. The causes of various diseases are closely interwoven. Professor Sedgwick tells us that "Hazen's theorem" shows for every death from typhoid fever

avoided by the purification of a polluted water supply two or three deaths are avoided from other causes. Hook-worm disease in the South is a chief cause of incapacitation, especially among the poor whites. For this reason the hook worm has been nicknamed the "germ of laziness." It is believed that a sufferer from hook-worm disease is incapacitated from one-fourth to one-half of the time.

. . . The social diseases, which certainly are preventable, are one of the gravest of the menaces to national efficiency.

American railways in 1907–8 killed nearly 11,800 and injured nearly 111,000 persons. The deaths and disablements from accidents in industry, although less carefully recorded, also represent a great and needless impairment of efficiency.

CHAPTER IV—PREVALENCE OF MINOR AILMENTS.

§ 1. *Importance of minor ailments.*—Minor ailments are far more common than most persons realize. They are chiefly functional disorders, such as of the stomach, heart, nerves, liver, kidney, etc. These deserve more attention than they have hitherto received, because they are the gateway to more serious troubles. For instance, those who neglect colds, or what seem to be colds, will be far more likely to become victims of tuberculosis or pneumonia. No statistics of the prevalence of minor ailments exist. Physicians, whose experience gives them good opportunity to judge, place the time lost annually for each person from minor ailments at three or more days a year.

§ 2. *Preventability of minor ailments.*—Practically all minor ailments can be avoided by proper hygiene, public and private. Neurasthenia, so common in America, is one of the most serious and insidious introductions to grave disorders, and is usually due to needless worry or failure to have adequate recreation.

CHAPTER V—PREVALENCE OF UNDUE FATIGUE.

§ 1. *Strength, endurance, and fatigue.*—Strength is measured by the force a muscle can exert once; endurance by the number of times it can repeat an exertion requiring a specified part of the strength. Fatigue is a chemical effect, due to "fatigue poisons." Far greater differences exist between different persons in respect to endurance than in respect to strength. Some "well" people become tired by a short walk, while others withstand hours of walking, running, or climbing.

§ 2. *Alcohol and fatigue.*—The "Committee of Fifty" found that alcohol gives no persistent increase of muscular power. It is well understood by all who control large bodies of men engaged in physical labor that alcohol and effective work are incompatible. Rivers, writing on the influence of alcohol on fatigue, found that when workmen were provided with a moderate amount of wine it resulted in a considerable diminution of their capacity for work.

§ 3. *Tobacco and fatigue.*—Athletes recognize that smoking interferes with one's "wind" or "staying power." "Inhaling" tobacco smoke brings carbon-monoxide directly into the blood stream. It is found that smoking increases blood pressure, which fact possibly partly explains the reduction in endurance.

§ 4. *Diet and fatigue.*—When excessive amounts of the protein element in food (exemplified in white of egg or the lean part of meat) are taken, they putrefy in the large intestine, producing "auto-intoxication." For this and other reasons, there is a present tendency among physiologists to advise a reduction in the use of such foods from the amounts customary in many countries, and especially in the United States. Auto-intoxication induces fatigue. The comparison of those using high protein and of those using low protein shows in general, although with some exceptions, that the former have less endurance than the latter. Whether the latter are vegetarian or not does not seem to matter. Experiments

show that thorough mastication leads instinctively to a reduction in protein.

§ 5. *Exertion and fatigue.*—Oxygen, whether taken naturally or artificially, increases the capacity for exertion. A judicious amount of exercise is perhaps the chief factor in producing the highest state of muscular efficiency. Physical training, comprising exercise and other hygienic measures, will probably make the capacity to withstand great exertion three or four times that possessed by most persons.

§ 6. *The working day.*—The present working day, from a physiological standpoint, is too long, and keeps the majority of men and women in a continual state of overfatigue. It starts a vicious circle, leading to the craving of means for deadening fatigue, thus inducing drunkenness and other excesses. Experiments in reducing the working day show a great improvement in the physical efficiency of laborers, and in many cases results in even increasing their output sufficiently to compensate the employer for the shorter day. Several examples of such a result exist, but the real justification for a shorter work day is found in the interest of the race, not the employer. One company, which keeps its factory going night and day, found, on changing from two shifts of twelve hours each to three shifts of eight hours each, that the efficiency of the men gradually increased, and the days lost per man by illness fell from seven and one-half to five and one-half per year. Public safety requires, in order to avoid railway collisions and other accidents, the prevention of long hours, lack of sleep, and undue fatigue in workmen.

§ 7. *The importance of preventing undue fatigue.*—The economic waste from undue fatigue is probably much greater than the waste from serious illness. This is because the number of fatigued persons is great enough to more than outweigh the fact that the incapacitation from fatigue is relatively small. Moreover, the relatively slight impairment of efficiency due to overfatigue leads to greater impairment from serious illness. A typical succession of events is, first, fatigue,

then "colds," then tuberculosis, then death. The prevention of undue fatigue means the arrest at the start of this accelerating chain of calamities.

[Part III, comprising about two-fifths of the Report, deals with the conserving of life by various methods, through improving the hereditary vitality (the ideal of the new science of eugenics), and through hygiene, public, semipublic and personal.]

PART IV.—*Results of conserving life.*

CHAPTER XI—PROLONGATION OF LIFE.

§ 1. *Life is lengthening.*—So far as we can judge from statistics of the average duration of life, it has been on the increase for three hundred and fifty years, and is now increasing more rapidly than ever before. During the seventeenth and eighteenth centuries the increase was at the rate of about four years per century; during the first three-quarters of the nineteenth century the rate was about nine years. At present in Massachusetts life is lengthening at the rate of about fourteen years per century; in Europe about seventeen; and in Prussia, the land of medical discovery and its application, twenty-seven. In India, where medical progress is practically unknown, the life span is short (twenty-five) and remains stationary.

§ 2. *Table showing further practicable prolongation.*—It is possible to estimate the effect on the length of life of the partial elimination of various diseases. Using the statistics, experience, and estimate of 18 physicians as to the preventability of each of the list of 90 causes of death, we find that the length of life could easily be increased from forty-five to sixty, an increase of one-third, or fifteen years. This would result in a permanent reduction in death rate of about 25 per cent. The principal reductions would be from infantile diarrhea and enteritis, over 60 per cent. of which could be prevented, with the result of an addition to the average length

of life of 2.32 years. Broncho-pneumonia, also an infant disease, could be prevented to the extent of 50 per cent., whereby life would be lengthened by 0.60 year. Meningitis, which is usually fatal at the age of two, could be prevented by at least 70 per cent., and this prevention would lengthen the average life by 0.60 year. Eighty-five per cent. of the mortality by typhoid fever is unnecessary, and if avoided would lengthen life at least 0.65 year. It would be feasible to prevent at least 75 per cent. of cases of tuberculosis of the lungs, and thereby to lengthen life by about two years. If the deaths from violence were reduced only 35 per cent., human life would be increased by 0.86 year. The prevention of 45 per cent. of cases of pneumonia would lengthen life by 0.94 year. These seven diseases alone could easily be reduced by these amounts so as to lengthen life by eight years. This could be done simply through insistence by the public on pure milk, pure water, pure air, and reasonable protection from accidents.

§ 3. *Effect of prolongation at different ages.* [Discussion of a diagram representing the life table of Massachusetts for 1893-1897.] It shows that about thirteen or more years could easily be added to the average duration of life. The diagram also shows the extent to which the additional life would fall in different ages. The per cent. of life which would fall to the ages between 17½ and 60, taken as the working period, would remain the same, namely, about 55 per cent.

§ 4. *Fifteen years a minimum estimate.*—The estimate of fifteen years is a minimum because, first, it takes no account of future medical discoveries, such as a method of curing or preventing cancer and of postponing old age, as would Metchnikoff; second, it takes little account of the cumulative influence of hygiene. The full benefit of hygiene cannot be felt until it is practised throughout life, and not at the approach of specific danger. Most so-called "causes" of death are merely the last straws which break the camel's back. When a pure water supply prevents deaths from typhoid fever, it prevents two or three times as many deaths from other causes.

Third, it takes no account of the racial effects of new health ideals leading, in a general way, as they must, to healthier marriages.

§ 5. *Need of lengthening human life.*—With increase of knowledge the period of education or preparation for life must constantly increase. This fact creates a need for a longer life, with the later periods of life increased in proportion. The result of such a prolongation will be not the keeping alive of invalids, but the creation of a population containing a large number of vigorous old men. Metchnikoff says, "The old man will no longer be subject to loss of memory or to intellectual weakness; he will be able to apply his great experience to the most complicated and most delicate parts of the social life."

§ 6. *The normal lifetime.*—It is usually recognized that human life is abnormally short, but no exact determination has ever been made of what constitutes a normal lifetime. Flourens maintains that a mammal lives five times the length of its growing period, which would mean, since the growing period for man does not cease until about 30, a normal human lifetime of one hundred and fifty years. Another method of estimating normal life is to reckon the length of normal life as the time when old age now sets in, 83 years. But clearly, if Metchnikoff is right in thinking that old age itself is abnormal, the normal lifetime must exceed 83. Many remarkable cases of longevity are on record, but most cases of reputed centenarians are not authenticated. Drakenburg's record was authentic, and he lived to be 146. Mrs. Wood, of Portland, Ore., recently died at 120. To what extent these exceptional cases could be made common cannot, as yet, be known.

CHAPTER XII—THE MONEY VALUE OF INCREASED VITALITY.

§ 1. *Money appraisal of preventable wastes.*—Doctor Farr has estimated the net economic value of an English agricultural laborer at various times of life by discounting his chance

of future earnings after subtracting the cost of maintenance. On the basis of this table we may construct a rough estimate of the worth of an average American life at various ages, assuming that only three-fourths of those of working age are actually earners of money or housekeepers. It gradually rises from a value of $90 in the first year to $4,200 at the age of 30, and then declines until it becomes negative for the higher ages. This estimate assumes $700 per year as the average earnings in middle life. This is largely conjecture, but is regarded as a very safe estimate. Applying this table to the existing population at various ages in the United States, we find that the average value of a person now living in the United States is $2,900, and the average value of the lives now sacrificed by preventable deaths is $1,700. The latter is smaller than the former because the age of the dying is greater than the age of the living. Applying the $2,900 to the population of eighty-five and a half millions, we find that our population may be valued as assets at more than $250,000,000,000; and since the number of preventable deaths is estimated at 630,000, the annual waste from preventable deaths is 630,000 times $1,700 or about $1,000,000,000. This represents the annual preventable loss of potential earnings.

We saw in Chapter III that there are always 3,000,000 persons in the United States on the sick list, of whom about 1,000,000 are in the working period of life and about three-quarters are actually workers and must lose at least $700, which makes the aggregate loss from illness more than $500,000,000. Adding to this another $500,000,000 as the expense of medicines, medical attendance, special foods, etc., we find the total cost of illness to be about $1,000,000,000 per year, of which it is assumed that at least one-half is preventable. Adding the preventable loss from death, $1,000,000,000, to the preventable loss from illness, $500,000,000, we find one and a half billions as the very lowest at which we can estimate the preventable loss from disease and death in this country. The true figures from the statistics available may well amount to

several times this figure, but when statistics are based partially on conjecture, they need to be stated with special caution.

§ 2. *The cost of conservation.*—In Huddersfield the annual deaths of infants for ten years had been 310. By systematic education of mothers, the number in 1907 was reduced to 212. The cost of saving these 98 lives was about $2,000 or about $20 each. General Leonard Wood declared that the discovery of the means of preventing yellow fever saves annually more lives than were lost in the Cuban war. The hook-worm disease in the South impairs the earning power of its workmen by 25 or 50 per cent. To restore this earning power costs, by curing this disease, on an average, less than $1 for each case. These and other examples show that the return on investments in health are often several thousand per cent. per annum. Probably no such unexploited opportunity for rich returns exists in any other field of investment. An actuary suggests that if insurance companies should combine to contribute $200,000 a year for the purpose of improving the public health, the cost would be one-eighth of 1 per cent. of the premiums, and it would be reasonable to expect a decrease in death claims of much more than 1 per cent. Even this 1 per cent. would make a profit of more than seven times the expense.

CHAPTER XIII—THE GENERAL VALUE OF INCREASED VITALITY.

§ 1. *Disease, poverty, and crime.*—Money estimates of waste of life are necessarily imperfect and sometimes misleading. The real wastes can only be expressed in terms of human misery. Poverty and disease are twin evils and each plays into the hands of the other. From each springs vice and crime. Again, whatever diminishes poverty tends to improve health, and *vice versa.*

§ 2. *Conservation of natural resources.*—The conservation of our natural resources—land, raw materials, forests, and water—will provide the food, clothing, shelter, and other

means of maintaining healthy life, while the conservation of health likewise tends in many ways to conserve and increase wealth. The more vigorous and long lived the race, the better utilization it will make of its natural resources. This will be true for two reasons in particular: First, the greater inventiveness or resourcefulness of vigorous minds in vigorous bodies. Civilization consists chiefly in invention and the most progressive nations are those whose rate of invention is most rapid. Second, the greater foresight and solicitude for the future. As it is usually the normal healthy man who provides life insurance for his family, so it will be the normal healthy nation which will take due care of its resources for the benefit of generations yet unborn.

CHAPTER XIV.—THINGS WHICH NEED TO BE DONE.

§ 1. *Enumeration of principal measures.*—Federal, State and municipal boards of health should be better appreciated and supported. Their powers of investigation, administration, and disseminating information should be enlarged. School hygiene should be practised, and personal hygiene more emphasized. The multiplication of degenerates should be made impossible.

WAGES OF FARM LABOR

[EXTRACT from the Yearbook of the Department of Agriculture, 1910, pp. 194–200. Paper by George K. Holmes, Chief of Division of Production and Distribution, Bureau of Statistics.]

Various investigations. The subject of the wage rates of farm labor was first systematically investigated in this country by the Bureau of Statistics of the Department of Agriculture in 1866. The investigation was repeated with variations every few years until the latest one in 1909. The results of nineteen investigations are of record, covering the period of forty-four years, beginning with the abnormal conditions at the close of the Civil War and passing through the two sevére industrial depressions of 1873–1877 and 1893–1897, and the less severe depressions of 1884–86, 1903–4, and 1907–8.

From the beginning of this period to about 1897 agricultural overproduction was frequent. Immense areas of new public land came into cultivation, and farmers were painfully in debt, and often the prices of products were unprofitable, if not positively below the cost of production. Since 1897, and more especially since 1902, the financial condition of farmers has much improved. All of the conditions mentioned may be related to the wages of farm labor, and, in fact, apparently have been.

In the statement of wage rates, contained in this article, all original rates during the currency period 1866–1878 have been converted to gold. Some of the investigations were made in the spring with no explanation whether the published rates represented the current year or the preceding year; indeed, some of the wage rates, as, for instance, the rates of day labor

in harvest, must necessarily have belonged to the preceding year. In another case two investigations were made, but the published results were combined. These statements account for the use of a double year in several instances.

Wage rates of men per month. The average wage rate of $15.50 was paid for the labor of men on farms per month, in hiring by the year without board, in the United States in 1866. This average rate was maintained in 1869, after which there was an increase to $17.10 in 1875; to $18.52 in 1880 or 1881; to $19.22 in 1885; and in 1909 to $25.46. During the entire period the wage rate increased about two-thirds. From 1866 to 1909 the increase in the North Atlantic States was from $22.04 to $30.89; in the South Atlantic States, from $10.67 to $18.76; in the North Central States, from $20.39 to $30.55; in the South Central States, from $12.57 to $20.27; and in the Western States, from $40.28 to $44.35, a rate of increase in the last-mentioned group far below that of the other divisions.

The foregoing are money rates of wages, and do not include supplemental wages not expressed in money which are more or less customary in all parts of the country. Among the items of supplemental wages are use of dwelling, often with garden and accommodations for cow and swine; wood for fuel; pasture for cow, horse, or swine; and other items.

For only two years, 1866 and 1909, was the wage rate ascertained for the outdoor labor of men per month in hiring by the season without board, and the rates are higher than they are for hiring by the year. In 1866 the average rate was $18.08; in 1909, $28.22.

The highest monthly rate, in hiring by the season, paid in any geographic division in 1909 was $48.04 in the Western; after which follow in order, $35.11 in the North Atlantic; $33.64 in the North Central; $22.48 in the South Central; and $20.86 in the South Atlantic.

During the period 1890–1906 wage rates were not ascertained for hiring by the year and season separately, but for the two combined, and the hirings were combined for 1909.

During this period monthly wage rates in hiring for the season and year combined, without board, increased from $19.45 to $27.43. The increase in the North Atlantic division was from $24.72 to $33.68; in the South Atlantic from $13.94 to $20.13; in the North Central from $22.25 to $32.90; in the South Central from $16.10 to $21.85; and in the Western from $33.96 to $47.24.

Rates per day. Every one of the nineteen investigations of the wage rates of farm labor included the rate per day in harvest work with board. At the beginning of the period, in 1866, the rate was $1.04 and the increase was to $1.18 in 1875, followed by a decline to $1.04 at the end of the industrial depression of that time, after which there was an advance continuously to $1.20 in 1882; but the depression of 1884–1886 and a period of overproduction and low prices for farm products reduced the rate below that of 1882 until, in the depression of 1893–1897, the rate was as low as 96 cents, after which there was a marked advance to $1.45 in 1906 and a rate of $1.43 in 1909.

Among the geographic divisions in 1909 the highest wage rate for harvest work with board was $2.02 in the Western States, after which follow in order, $1.87 in the North Central States; $1.62 in the North Atlantic; $1.10 in the South Central; and $1.03 in the South Atlantic.

In the North Atlantic division the rate increased throughout this period, 1866–1909, from $1.32 to $1.62; in the South Atlantic division from 79 cents to $1.03; in the North Central States from $1.31 to $1.87; in the South Central States from 92 cents to $1.10; and in the Western States from $1.93 to $2.02.

Lower rates than the foregoing were paid for day labor in other than harvest work with board. The average for the United States begins with 64 cents in 1866, followed by fluctuations similar to those of harvest wages, and ends the period in 1909 with $1.03.

The gain during the forty-four years was from 86 cents to

$1.16 in the North Atlantic division; from 43 cents to 73 cents in the South Atlantic; from 83 cents to $1.32 in the North Central; and from 55 cents to 82 cents in the South Central; while on the contrary there was a decline from $1.49 in 1866 and $1.50 in 1869 to $1.48 in 1909 in the Western States.

Industrialism, trade, and transportation. Several causes affecting farm wages were investigated in 1909. In the matter that follows dependence was placed on the census of 1900, except for the rates of wages. Farm wages are high in States in which there has been large development of manufacturing, mining, mechanical pursuits, trade, and transportation in comparison with States poorly or less developed in these directions, and conversely wages are lower in those States in which agriculture is predominant than in States where it is a subordinate industry. States in which the urban population is a large percentage of the entire population are those States in which the wages of farm labor are higher than in those in which urban population is of minor account.

Relation between production and wage rates. Necessarily in the long course of time the employing farmer must depend upon the value of his products for the wages that he pays to his laborers. He can not go on indefinitely paying wages out of capital, but he must in the general experience pay them out of farm products. Hence it follows as a matter of inference that farm wages may be higher in those States in which the value of the products per worker is higher than in those States in which the value of products per worker is lower.

This conclusion is amply substantiated in the investigation of farm wages in 1909. The highest wages are paid in the Western division of States, and in this division the average value of farm products per agricultural worker in 1899 was $759. Next below this division in both rate of wages and average value of farm products per worker, $678, is the North Central division; and third in order in both respects is the North Atlantic division. The South Central division is fourth in order in both rate of wages and value of products per

worker, which is $271; and last of all is the South Atlantic division in both respects, the average value of products per worker being $233. These values stand for gross amount of products, and not for net wealth produced.

Wages supplementary to money rates. The nominal money rate of wages paid for farm labor by no means fully represents the real wages received by the laborer. There are two important additions to the nominal money rate of wages which enter little if at all into the thoughts and plans of agricultural laborers. A farm laborer receiving, say, $30 per month, as he did in the North Atlantic and North Central States in 1909, often receives supplemental wages in the form of use of dwelling and garden, accommodations for cow, pigs, and poultry. The value of the supplemental wage allowances . . . is relatively a large addition to the nominal rate.

In the case of the man receiving $30 in money wages, the rental value of dwelling and appurtenances would probably be about $3.25 to $4.50. If the farm laborer gets firewood as an item of supplemental wages, its reported value per month ranges from about $1.06 to $2.39, the latter figure being applicable to the $30 laborer in the North.

It often happens that the laborer receives supplementary to his money rate of wages the privilege of pasturing his cow, horse, or swine, and the estimated monthly cost of this as an average for the United States is from 65 cents to $1.61. Or, there may be an allowance for feed outside of pasturage for cow, or horse, or swine, or poultry, and the cost of this as established by this investigation ranges from $1.11 to $3.11.

A very common supplementary wage allowance in some parts of the country, especially in the North Central States, is the frequent use of a horse and buggy by the farm laborer. The monthly value of this has been estimated by the correspondents of the Bureau of Statistics in all parts of the United States, with the result that it ranges from 87 cents to $2.37. Or, the laborer may own a horse, and stabling and feed are provided by his employer in addition to the money rate of

wages. For this service it is estimated that the cost ranges from 45 cents to $2 per month throughout the entire country.

Perhaps the laborer's family also receives without specific charge a considerable quantity of fruit. The value of this fruit is estimated on a monthly basis, although it may have been received within one season, and ranges from 62 cents to $1.64 monthly throughout the year. If the laborer is a single man, his employer hires a woman to do his laundry work as a part of the family wash, and the value of this service is estimated to range from 75 cents to $2 per month.

No laborer receives all of these supplemental wages, but it often happens that he receives more than one item of them. If he is a man of family, an increase of his monthly money rate of wages by $5 to $10 worth of supplemental allowances and even more is not uncommon in many States.

Advantage of farm wages in purchasing power. If the farm laborer is comparing his nominal rate of money wages with the similar rate of the motorman or conductor of the electric railway who lives in the city, he must take into consideration the less costly living that he gets on the farm. In some respects it is a better living, against which of course there must be made a set-off of features that are in some respects worse.

The farm laborer gets many things at prices which are as low as wholesale prices in the motorman's city, and sometimes lower. He can get his supply of poultry at low prices, if he does not produce it himself; and so with eggs, milk, and butter; sometimes flour and meal; very likely potatoes and other vegetables and fruit. At low prices he may also get fresh and salt pork, his fuel and, in many parts of the country, his tobacco. If he pays rent for his dwelling, he will pay, say, $40 per year, whereas the motorman with a family pays $150.

All things considered—the allowances received by the farm laborer supplemental to the money rate of wages and the lower cost of many things that he buys as compared with the cost in the city—the farm laborer receiving nominally $30 per

month really gets, in comparison with his situation as it would be if he lived in the city, perhaps more than the motorman or street-car conductor gets, and very likely in most cases a larger amount than he would be likely to earn in any occupation open to him in the city.

The money wage rates of farm laborers have increased in a marked degree within the last few years, and in this respect a comparison may be made with the wages of other workingmen. A still further comparison may be made between the purchasing power of the wages of the farm laborer in terms of food and the purchasing power of the wages of workingmen. The investigations of the United States Bureau of Labor make possible this comparison.

If the mean wage rates of agricultural laborers for the years 1890–1898 be regarded as 100, the rate per month of the outdoor labor of men on farms in hiring by the year and season in 1890 is represented by 100.9. The relative number increased to 103.6 in 1893, and there was a sudden decline to 96.3 in 1894, after which there was an unbroken increase in this relative number until in 1907 it was 141.1.

The purchasing power of the wages of the farm laborer in 1907 in terms of actual food consumption in comparison with the mean of 1890–1898 is represented by the comparative number 117.1. In 1907 the corresponding relative number standing for the wages of the workingman was 122.5 and the purchasing power of his wages in terms of actual food consumption in 1907 is represented by the relative number 101.7, as compared with the mean of 1890-1898 which, as before stated, is represented by 100.

As time advanced after 1890 the farm laborer, setting out with wages having a relative purchasing power in terms of food about equal to that of the workingman, passed him in this respect in 1899, and rapidly gained upon him in subsequent years.

Ability of laborers to become tenants or owners. In the investigation of farm wages in 1909 inquiries were made

to ascertain to what extent male outdoor farm laborers were qualified to become farm tenants. In the opinion of the correspondents who supplied answers, 48 per cent. of the laborers of the South Central States are so qualified; 46 per cent. in the North Central States; 37 per cent. in the Western; 35 per cent. in the South Atlantic; and, lowest of all, 33 per cent. in the North Atlantic States.

Correspondents were asked whether it was reasonably possible for farm laborers and tenants to save enough to buy a farm that would support a family even with the help of a mortgage, and their replies indicated that 72 per cent. of farm laborers and tenants find it reasonably possible to acquire farm ownership. The percentages for the geographic divisions are all over 70 and under 80—a remarkably uniform condition of affairs with regard to this matter throughout the United States.

Small movement from city to farm. The movement from city to farm for the purpose of permanent farm life and labor, either for hire or under ownership, has hardly become general enough in this country to present recognizable proportions. There is a little of this movement here and a little there, but nearly all cases are sporadic.

But there is one sort of labor that goes from city to farm which has become large enough to be perceptible, and that is seasonal labor for employment, not in general farming operations, but for special purposes. The migration of men from cities to follow the wheat harvest from Oklahoma to North Dakota is the best known feature of this sort of farm labor. It is not so generally known that women and children and some men, too, go from the city to the farm at certain seasons to harvest cucumbers to be sold to the pickle factory; to pick, grade, pack, and dry fruits; to harvest hops and berries, and dig potatoes, and so on with other crops that need a rush of labor at time of harvest. Some labor of this sort is applied also to the cultivation of crops, as in pulling weeds from beets and onions, but this labor does not seem to be used much for cultivating crops and not at all for planting.

"REAL WAGES" IN AMERICAN TOWNS

[In the British Board of Trade Report (April, 1911), the following comparison of wages and of the two main items in the cost of living shows the "large town" in an unexpectedly favorable light. The question occurs whether there are not other elements of income direct and indirect, psychic or material, which enter into the balance of advantages in living in large or small towns, and thus into the "real wages" (p. xxxvii).]

Relation of wages to rents and retail food prices. In the two following tables the mean index numbers for the wages of skilled men in the building, engineering and printing trades, and for rents, food prices and rents and food prices combined, have, for convenience, been brought together for the various geographical divisions and population groups that have been already considered:

. . . By combining the mean index numbers of the two main divisions of the tables—industrial conditions as illustrated by selected wages groups and social conditions as illustrated by selected food prices and rents—it is possible to derive an index number that, so far as this is determined by the element of charges for rent and food, may be said roughly to indicate "real wages," i.e., the relative purchasing power of work people in the different areas and groups. Taking New York as 100 and working out the percentage ratios of the mean index numbers for wages to those of the mean index numbers for rents and food prices combined, the result is shown in the table on page 185.

In the population groups the order as determined by the wages index numbers is maintained throughout in the "real wages" column, although the differences from the New York standard are always diminished, the range being from 89 to

Mean index numbers.

	Number of towns in group.	Wages (skilled men). Building.	Engineering.	Printing (compositors.)	Rents and food prices. Rents.	Food prices.	Rents and food prices combined.[1]
Comparison by geographical groups.							
New York	1	100	100	100	100	100	100
New England towns	6	82	77	82	66	103	94
Other Eastern towns	4	91	84	87	68	100	92
Central towns	6	90	85	86	71	97	90
Middle West towns	5	103	91	90	79	95	91
Southern towns	6	87	92	86	75	103	96
Comparison by population groups.							
New York (population 4,766,883)	1	100	100	100	100	100	100
Other towns with more than 500,000 inhabitants	8	97	88	89	78	98	93
Towns with from 250,000 to 500,000 inhabitants	5	92	86	87	73	96	90
Towns with from 100,000 to 250,000 inhabitants	8	87	83	85	69	101	93
Towns with under 100,000 inhabitants	6	83	85	82	64	102	93

100 instead of 83 to 100, and for the two largest groups of towns showing, as thus measured, no appreciable difference from New York.

In the geographical divisions the position as shown is somewhat different, the rather advantageous price levels of the towns of the Middle West combined with a high level of wages, especially in the building trades, giving an index number for "real wages," as calculated, 4 points higher than for New York itself. On the other hand, the high prices of the New England group of towns combined with a lower level of wages in the selected trades give a level of "real wages" 15

[1] In the construction of this index number food prices have been given a weight of three and rents of one.

	Number of towns in group.	Wages of skilled men in building, engineering, and printing trades.	Rents and food prices combined.	Approximate relative level of "real wages."
	Comparison by geographical groups.			
New York.....	1	100	100	100
New England towns	6	80	94	85
Other Eastern towns	4	87	92	95
Central towns.....	6	87	90	97
Middle West towns..	5	95	91	104
Southern towns.....	6	88	96	92
	Comparison by population groups.			
New York (population 4,766,883)...	1	100	100	100
Other towns with more than 500,000 inhabitants	8	91	93	98
Towns with from 250,000 to 500,000 inhabitants	5	88	90	98
Towns with from 100,000 to 250,000 inhabitants	8	85	93	91
Towns with under 100,000 inhabitants	6	83	93	89

per cent. lower than that of New York, and 7 points lower than the Southern group of towns—the group which ranks next above that of New England in the order of purchasing power as calculated in the table. Apart from these two groups the difference from the New York standard does not exceed 5 points. It would be unwise to press the comparisons shown unduly, but the difference of 19 points shown as between the New England group and the towns of the Middle West is considerable, and may probably be taken as an indication of real differences that exist between a center of industry, such as that of New England, that is now somewhere removed from the main centers of development, and one, such as that of the towns of the Middle West, that is comparatively new and able to benefit more immediately from the great natural resources of the country.

IMMIGRATION AND CONDITIONS OF LABOR

[By Act of Congress, February 20, 1907, an Immigration Commission was created, to consist of three Senators, three members of the House of Representatives, and three citizens to be appointed by the President of the United States. This commission had the duty of making full "inquiry, examination and investigation," of the subject of immigration. The results of the Commission's thorough work will be embodied in forty-two volumes, and "the gist of the information" thus collected is presented in a volume prepared by Professor J. W. Jenks (one of the commissioners) with the collaboration of W. J. Lauck, expert in charge of the industrial investigations. (The Immigration Problem, N. Y. Funk and Wagnalls, 1912.)

By permission we reproduce (with some amendments by the author) the greater part of the chapter containing the conclusions as to the effect of immigration on wages, entitled, "The immigrant as a dynamic factor in industry" (pp. 182–197).]

The absorption of so large numbers of alien people into the mines and manufacturing establishments, and into the general labor force of the United States, was obviously attended by very important results. These effects of the intense employment of southern and eastern Europeans may be briefly considered, from (1) the standpoint of the general industrial situation, and (2) that of native Americans and older workmen. Before entering into a discussion of these effects, however, it will be necessary, in order that the situation may be fully comprehended, to review briefly the personal and industrial qualities of the recent immigrant labor supply to the United States. These are briefly set forth below.

Lack of technical training. . . . An exceedingly small proportion have had any training abroad for the industrial occupations in which they have found employment in the United States. More recent immigrants have been drawn

from the agricultural classes of southern and eastern Europe, having been farmers or farm laborers in their native lands. The only exception is the Hebrews, three-fifths of whom were engaged in some form of manufacturing or hand-trades before coming to this country.

Illiteracy and inability to speak English. The new immigrant labor supply, owing to the fact that it is composed of men of non-English-speaking races, and is characterized by a high degree of illiteracy, has been found to possess but small resources upon which to develop industrial efficiency and advancement. Owing to their segregation and isolation from the native American population in living and working conditions, their progress in acquiring the use of the English language, and in learning to read and write, has been very slow.

Their necessitous condition. . . . Immigrants from the south and east of Europe have usually had but a few dollars in their possession when the port of disembarkation in this country has been reached. During the five years from 1905 to 1909 inclusive the average amount per person among these immigrants has been somewhat more than one-third as much as among immigrants from northern and western Europe. Consequently, finding it absolutely imperative to engage in work at once, they have not been in a position to take exception to wages or working conditions, but must obtain employment on the terms offered or suffer from actual want.

Standards of living. The standards of living of the recent industrial workers from the south and east of Europe have also been very low. Furthermore, the recent immigrants being usually single, or, if married, having left their wives abroad, have in large measure adopted a group instead of a family living arrangement, and thereby have reduced their cost of living to a point far below that of the American or of the older immigrant in the same industry. The method of living often followed is that commonly known as the "boarding-boss" system. . . .

Under this general method of living, which prevails among the greater proportion of the immigrant households, the entire outlay for necessary living expenses of each adult member ranges from $9 to $15 each month. The additional expenditures of the recent immigrant wage-earners are small. Every effort has been made to save as much as possible. The entire life interest and activity of the average wage-earner from southern and eastern Europe has seemed to revolve about three points: (1) to earn the largest possible amount under the existing conditions of work; (2) to live upon the basis of minimum cheapness, and (3) to save as much as possible. All living arrangements have been subordinated to the desire to reduce the cost of living to its lowest level. Comfort seems not to be considered. With such standards of living the older employees have been unable, or have found it extremely difficult, to compete.

Lack of permanent interest. . . . Recent immigrants who have sought work in American industries as a whole have manifested but a small degree of permanent interest in their employment or in the industry. They have constituted a mobile, migratory, and disturbing wage-earning class, constrained mainly by their economic interest, and moving readily from place to place according to changes in working conditions or fluctuations in the demand for labor. This condition of affairs is made possible by the fact that so large a proportion of the recent immigrant employees are single men, or married men whose wives are abroad, and by the additional fact that the prevailing method of living among immigrant workmen is such as to enable them to detach themselves from an occupation or a locality whenever they may wish. Their accumulations also are in the form of cash or are quickly convertible into cash. In brief, the recent immigrant has no property or other constraining interests which attach him to a community, and the larger proportion are free to follow the best industrial inducements.

This characteristic has both a good and a bad influence.

It creates a certain flexibility in the labor supply, and to a certain extent brings about an exodus from the country in times of depression and curtailment of employment. It also causes an increased pressure and competition within the country. Probably the bad effect of this characteristic is greater than the good, all things considered.

Tractability of the immigrant. . . . The members of the larger number of races of recent entrance to the mines, mills and factories have been tractable and easily managed. This quality seems to be a temperamental one, acquired through past conditions of life in their native lands. In the normal life of the mines, mills and factories, the southern and eastern Europeans have exhibited a pronounced tendency toward being easily managed by employers and toward being imposed upon without protest, which has created the impression of subserviency. This characteristic, while strong, is confined, however, to the immigrant wage-earners of comparatively short residence in this country, and results from their lack of training or experience abroad, and from the difference between their standards and aspirations and those of older immigrant employees and native American industrial workers.

If the characteristics of the recent immigrant labor supply to the United States, as outlined above, be carefully borne in mind, the conditions which have been produced by its employment may be quickly realized.

Effect upon the use of machinery. . . . The lack of skill and industrial training of the recent immigrant to the United States has stimulated the invention of mechanical methods and processes which might be conducted by unskilled industrial workers as a substitute for the skilled operatives formerly required. This condition of affairs obviously must have been true, or the expansion of American industry within recent years would not have been possible. A large number of illustrations of this tendency might be cited. Probably three of the best, however, are the automatic looms and the ring spindles in the cotton-goods manufacturing industry, the bottle-

blowing and casting machines in bottle and other glass factories, and the machines for mining coal.

Change of the form of industrial organization. Another, but more minor, general industrial effect of the employment of the southern and eastern Europeans is observable in the increase in the number of subforemen in many industries. This situation arises principally from the fact that the recent immigrants are usually of non-English-speaking races, and therefore require a larger amount of supervision than the native Americans and older immigrants from the United Kingdom and northern Europe. The function of the subordinate foremen is chiefly that of an interpreter.

As regards other changes in industrial organization and methods, probably the most important effect observable is seen in the creation of a number of special occupations, the incumbents of which perform all the dangerous or responsible work which before the employment of southern and eastern Europeans was distributed over the entire operating force. The best example of this tendency is to be found in the newly developed occupation of "shot-firer" in bituminous and anthracite coal mines. The mine worker in this occupation prepares and discharges the blasts or shots for bringing down the coal. Until within recent years each miner did his own blasting, but with the employment of the untrained southern and eastern Europeans in the mines, it was soon found that the safety of the operating forces and the maintenance of the quality of the output required that blasting should be done by experienced native American or older immigrant employees. . . .

Working conditions. The lack of industrial training and experience of the recent immigrant before coming to the United States, together with his illiteracy and inability to speak English, has had the effect of exposing the original employees to unsafe and unsanitary working conditions, or has led to the imposition of conditions of employment which the native American or older immigrant employees have con-

sidered unsatisfactory and in some cases unbearable. When the older employees have found dangerous and unhealthy conditions prevailing in the mines and manufacturing establishments and have protested, the recent immigrant employees, usually through ignorance of mining or other working methods, have manifested a willingness to accept the alleged unsatisfactory conditions. In a large number of cases the lack of training and experience of the southern and eastern European affects only his own safety. On the other hand, his ignorant acquiescence in dangerous and unsanitary working conditions may make the continuance of such conditions possible and become a menace to a part or to the whole of an operating force of an industrial establishment. In mining, the presence of an untrained employee may constitute an element of danger to the entire body of workmen. There seems to be a direct causal relation between the extensive employment of recent immigrants in American mines and the extraordinary increase within recent years in the number of mining accidents. It is an undisputed fact that the greatest number of accidents in bituminous coal mines arise from two causes: (1) the recklessness, and (2) the ignorance and inexperience of employees. When the lack of training of the recent immigrant abroad is considered in connection with the fact that he becomes a workman in the mines immediately upon his arrival in this country, and when it is recalled that a large proportion of the new arrivals are not only illiterate and unable to read any precautionary notices posted in the mines, but also unable to speak English and consequently without ability to comprehend instructions intelligently, the inference is plain that the employment of recent immigrants has caused a deterioration in working conditions.

No complete statistics have been compiled as to the connection between accidents and races employed, but the figures available clearly indicate the conclusion that there has been a direct relation between the employment of untrained foreigners and the prevalence of mining casualties. The mining

inspectors of the several coal-producing States, the United States Geological Survey, and the older employees in the industry, also bear testimony in this respect to the effect of the employment of the southern and eastern European. The opinion of the Geological Survey is of especial interest and may be briefly quoted:

> Another important factor in the United States is to be found in the nationality of the miners. Most of the men are foreign-born, a large proportion of them are unable to understand English freely, and a still larger number are unable to read or write that language. Some of them are inexperienced and do not take proper precautions either for their own safety or that of others. This becomes a most serious menace unless they are restrained by properly enforced regulations. . . .

The immigrant and labor organizations. The entrance into operating forces of the mines and manufacturing establishments, in such large numbers, of the races of recent immigration, has also had the effect of weakening the labor organizations of the original employees, and in some of the industries has caused their entire demoralization and disruption. This has been due to the character of the recent immigrant labor supply, and to the fact that so large numbers of recent immigrants have found employment in American industries within such a short period of time. On account of lack of industrial training and experience, low standards of living, as compared with native American wage-earners, their necessitous condition on coming to this country and their tractability, southern and eastern Europeans, as already noted, have been willing to accept the existing rates of compensation and working conditions. The thriftiness and industriousness of recent immigrants have also made them unwilling to enter into labor disputes involving loss of time, or to join labor organizations to which it is necessary to pay regular dues. As a consequence, they have not affiliated with labor organizations unless compelled to do so as a preliminary step toward acquiring work; and then, after becoming members of the labor union, they have manifested but little in-

terest in the tenets or policy of the organization. In the instances where they have united with the labor organizations, on the occasion of strikes or labor dissensions, they have usually refused to maintain membership for any extended period of time, thus rendering difficult the unionization of the industry or occupation in which they are engaged.

Furthermore, the fact that recent immigrants are usually of non-English-speaking races, and their high degree of illiteracy, have made their absorption by the labor organizations very slow and expensive. In many cases, too, the conscious policy of the employers of mixing the races in different departments and divisions of labor, in order, by a diversity of tongues, to prevent concerted action on the part of employees, has made unionization of the immigrant almost impossible.

The significant result of the whole situation has been that the influx of the southern and eastern Europeans has been too rapid to permit of their absorption by the labor organizations which were in existence before their arrival. In some industries the influence and power of the labor unions are concerned only with those occupations in which the competition of the southern and eastern European has been only indirectly or remotely felt, and consequently the labor organizations have not been very seriously affected. In the occupations and industries in which the pressure of the competition of the recent immigrant has been directly felt, either because the nature of the work was such as to permit of the immediate employment of the immigrant or through the invention of improved machinery his employment was made possible in occupations which formerly required training and apprenticeship, the labor organizations have been, in a great many cases, completely overwhelmed and disrupted. In other industries and occupations in which the elements of skilled training and experience were requisite, such as in certain divisions of the glass-manufacturing industry, the effect of the employ-

ment of recent immigrants upon labor organizations has not been followed by such injurious results.

Racial displacement. Competition of the southern and eastern European has led to a voluntary or involuntary displacement, in certain occupations and industries, of the native American and of the older immigrant employees from Great Britain and northern Europe. These racial displacements have manifested themselves in three ways:

(a) A large proportion of native Americans and older immigrant employees from Great Britain and northern Europe have left certain industries, such as bituminous and anthracite coal mining and iron and steel manufacturing.

(b) A part of the earlier employees who remained in the industries in which they were employed before the advent of the southern and eastern European, have been able, because of the demand growing out of the general industrial expansion, to rise to more skilled and responsible executive and technical positions which required employees of training and experience. In the larger number of cases, however, where the older employees remained in a certain industry after the pressure of the competition of the recent immigrant had begun to be felt, they relinquished their former positions and segregated themselves in certain other occupations. This tendency is best illustrated by the distribution of employees according to race in bituminous coal mines. In this industry all the so-called "company" occupations, which are paid on the basis of a daily, weekly, or monthly rate, are filled by native Americans or older immigrants and their children, while the southern and eastern Europeans are confined to pick mining and the unskilled and common labor. The same situation exists in other branches of manufacturing enterprise. A stigma has become attached to the working in the same occupations as the southern and eastern European so that, in some cases, as in the bituminous coal mining industry, the older class of employees segregate in occupations which,

from the standpoint of compensation, are less desirable than those occupied by recent immigrants. In most industries the native American and older immigrant workmen who have remained in the same occupations in which the recent immigrants are predominant are the thriftless, unprogressive elements of the original operating forces.

Another striking feature of the competition of southern and eastern Europeans is the fact that in the case of most industries, such as iron and steel, textile and glass manufacturing, and the different forms of mining, the children of native Americans and of the older immigrants from Great Britain and northern Europe are not entering the industries in which their fathers have been employed. All classes of manufacturers claim that they are unable to secure a sufficient number of native-born employees to insure the development of the necessary number of workmen to fill the positions of skill and responsibility in their establishments. This condition of affairs is attributed to three factors: (1) General or technical education has enabled a considerable number of the children of industrial workers to command business, professional or technical occupations apparently more desirable than those of their fathers. (2) The conditions of work which have resulted from the employment of recent immigrants have rendered certain industrial occupations unattractive to the wage-earner of native birth. (3) Occupations other than those in which southern and eastern Europeans are engaged are sought for the reason that popular opinion attaches to them a more satisfactory social status and a higher degree of respectability. Whatever may be the cause of this aversion of older employees to working by the side of the new arrivals, the existence of the feeling has been crystallized into one of the most potent causes of racial substitution in manufacturing and mining occupations.

Effects upon wages and hours of work. . . . There is no evidence to show that the employment of southern and eastern European wage-earners has caused a direct lowering of

wages or an extension in the hours of work in mines and industrial establishments. It is undoubtedly true that the availability of the large supply of recent immigrant labor prevented the increase in wages which otherwise would have resulted during recent years from the increased demand for labor. . . . As a general proposition, it may be said that all improvements in conditions and increases in rates of pay have been secured in spite of their presence. The recent immigrant, in other words, has not actively opposed the movements toward better conditions of employment and higher wages, but his availability and his general characteristics and attitude have constituted a passive opposition which has been most effective.

General conclusions. (1) The influx of recent immigrants has, by affording an adequate labor supply, made possible the remarkable expansion in mining and manufacturing in the United States during the past thirty years.

(2) The extensive employment of southern and eastern Europeans has seriously affected the native Americans and older immigrant employees from Great Britain and northern Europe by causing displacements and by retarding advancement in rates of pay and improvements in conditions of employment.

(3) Industrial efficiency among the recent immigrant wage-earners has been very slowly developed, owing to their illiteracy and inability to speak English.

(4) For these same reasons the general progress toward assimilation and the attainment of American standards of work and living has also been very slow.

(5) The conclusion of greatest significance developed by the general industrial investigation of the United States Immigration Commission is that the point of complete saturation has already been reached in the employment of recent immigrants in mining and manufacturing establishments. Owing to the rapid expansion in industry which has taken place during the past thirty years, and the constantly increasing

employment of southern and eastern Europeans, it has been impossible to assimilate the newcomers, politically or socially, or to educate them to American standards of compensation, efficiency or conditions of employment.

(6) Too much emphasis, in the discussion of immigration within recent years, has been placed upon the social and political results of recent immigration vastly important as they are. The problem at present is really fundamentally an industrial one, and should be principally considered in its economic aspects.

WAGES AND COST OF LIVING

[In "A comparative study of railway wages and the cost of living," etc. (Bulletin 34 of the Bureau of Railway Economics, Washington, D. C., June, 1912, L. G. McPherson, Director; F. H. Dixon, Chief Statistician), summaries are made of various official reports on the subject, including the recent report of the British Board of Trade. The following are the main conclusions, conveniently summarized by the Bureau (p. 5):]

Railway wages. Information is not obtainable upon which can be based a comprehensive statement of railway wages being paid at this time in the different countries. Therefore it is necessary to make comparisons for the latest year for which comparable data are available.

The average daily compensation of railway employees of all classes for the year 1910 was in the United States, $2.23; in the United Kingdom, $1.05; excluding supplementary allowances negligibly affecting the average, it was in Prussia-Hesse 81 cents, and in Austria 89 cents. The lowest paid railway employee in the United States, the ordinary trackman, receives a greater compensation than many of the railway employees of France, even those of higher grades and with responsible duties. The compensation of railway employees is from two to three times as high in the United States as in Italy.

A recent report of the Board of Trade on railway wages shows that the average weekly pay of enginemen in the United Kingdom in 1907 was $11.17; of firemen, $6.67. In the same year enginemen on American railways received an average weekly compensation of $25.80, counting six days to the week, and firemen $15.24. Recent returns make it clear that in 1912 enginemen and firemen in the United States are compensated

at rates of pay for specific runs that are two, three and four times as high as the corresponding rates on representative English railways. The annual compensation of enginemen in the United States, as reported by two representative railway companies, now ranges from $1,100 in switching service to over $2,800 in passenger service, and of firemen from $700 in switching service to over $1,700 in passenger service.

For Continental Europe official returns in requisite detail are not available for a later year than 1908. The salaries and allowances of the typical engineman in Germany amounted for that year to $646.88, in Austria to $870.80; of a fireman in Germany to $424.59, in Austria to $532.03. The annual compensation of enginemen on two of the principal railways of France ranged in 1908 from $505.66 to $906.91, and of firemen from $324.24 to $595.98. In Italy enginemen received in 1908, salary and allowances included, from $581.10 to $812.70 a year; firemen, from $330.30 to $475.05 a year. In these Continental countries the maximum compensation is received only after many years of service.

The average annual compensation of enginemen in the United States in 1908, on an estimated basis of 300 days' service, was $1,335; of firemen, $792. In this country the rate of compensation to these employees does not depend on length of service.

In Belgium enginemen received in 1907 from $23.16 to $38.60 a month; firemen, from $17.37 to $23.16 a month; conductors and station employees, from 46 cents to 96 cents a day. In the United States, in the same year 1907, enginemen averaged, on the basis of 25 days' service, $107.50 a month; firemen, $63.50 a month; conductors, $3.69 a day; station employees, from $1.78 to $2.05 a day.

An accurate wage comparison must take into account relative cost of living, and this has been done, so far as ascertainable data permits.

Rents [page 60]. The material regarding rents gathered by the British Board of Trade in its investigations into cost

of living may be summarized in the following tabular statement. The statistics relate to the housing accommodations of the kind and grade usually occupied by workingmen's families in the different countries.

RENTAL PER YEAR.[1]

Country.	Two rooms.	Three rooms.	Four rooms.	Five rooms.
United States.....	.....	$85—121	$110—152	$146—189
England and Wales[2]	$38—44	47— 57	57— 70	70— 82
London	57—95	76—114	95—133	114—164
Scotland	48—54	66— 81	.....	.....
Ireland	32—44	50— 63	70— 85	.....
France	30—36	37— 53	44— 55	.....
Paris	39—78	58— 94	78— 97	.....
Germany	34—44	44— 60	54— 76	.....
Berlin	63—76	88—117	.....	.....
Belgium	22—29	28— 36	34— 44	.....

The Board of Trade found that the predominant type of dwelling in the United States and in England and Wales was the four- or five-room house. The English house usually possesses, in addition, a scullery, or back kitchen. In the other European countries the houses, or in some instances flats, contained a smaller number of rooms, usually from two to three or from three to four. That is, the standard of housing was higher, on the average, in the United States and England than elsewhere. With this fact in mind, it becomes clear that a comparison of rental expenditures, for example, of the United States and France, would involve setting the rental value of a four-room house in the United States over against that of a three-room house or flat in France. Such a comparison would undoubtedly be proper and fair, but in the interest of caution rental values of the same grade of

[1] Inasmuch as local rates, or taxes, in the United Kingdom are paid by the occupier of a house, they are included in the rentals here reported for the United Kingdom, but not for the other countries. The burden of taxation must in the last analysis fall on the renter, whether the tax is paid directly by him or by the owner; this being true, no deduction is made in this table of the tax paid by the British occupier.

[2] Exclusive of London.

accommodation are here compared, regardless of standards of housing in the several countries.

The rental value of a three-room house or flat in the United States is higher than in any other country. In fact, with the exception of London, Paris and Berlin, the minimum value of such accommodation in the United States is higher than the maximum value of the same accommodation elsewhere. The same is true of four-room houses or flats, again excepting London. Data are not available for two-room accommodations. . . .

The range of rents may be standardized by taking the median or halfway point as the type in each case. . . .

TYPICAL ANNUAL RENTALS.

Country.	Three rooms.	Four rooms.	Five rooms.
United States	$102	$131	$167
England and Wales[a]	52	63	76
London	95	114	139
Scotland	73	...	...
Ireland	56	77	...
France	45	49	...
Paris	76	87	...
Germany	52	65	...
Berlin	102	...	...
Belgium	32	39	...

[a] Exclusive of London.

This table, while only approximate, shows clearly that rental values in the United States range considerably higher than in the several European countries under consideration.

[The examination of a table of prices of standard grades of commodities leads to the following conclusions.]

Comparative costs of living [page 66]. The comparison made by the Board of Trade of the cost of living in England and Wales with that in France shows that an English workingman transported to France would pay for the same standard of comfort about 18 per cent. more than he does in England. If coal be excluded, he would pay 11 per cent. more. Conversely, a French workingman would pay in Eng-

land about 5.7 per cent. less for the same standard of comfort than he is paying in France.

The English workingman, transported to Germany and living at his own standard of comfort, would pay 18 per cent. more than he is paying in England. This excludes a comparison of tea and coffee. Conversely, a German workingman transported to England, and living at his old standard of comfort, would find that his English price level was about 7.4 per cent. lower than it was in Germany.

Excluding commodities for which comparative prices could not be secured, the English workingman who moved to Belgium would find his budget increased by 2 per cent., or if coal were excluded, slightly decreased. Conversely, a Belgian workingman moving to England would find his cost of living increased by about 2 per cent., or if coal were excluded, increased by slightly over 5 per cent.

An English family moving to the United States and maintaining its regular standard of living, would find its budgetary expenses increased by 38 per cent. Conversely, an American family would pay 20 per cent. less for its accustomed dietary if it moved to England than it is now paying in the United States. These comparisons between the cost of living in England and the United States relate to the year 1909, a special investigation being made into English prices in February, 1909, to provide a budgetary basis comparable with that of the United States.

Combining these various comparisons, and bringing them to a common basis, the following are the results. An English family which was transferred in turn to the respective countries named below and maintained its normal standard of living, would find its expenditures for food and fuel to stand in the following relations to its expenditures in England, the latter being taken as par, or 100 per cent.:

In England and Wales	100	per cent.
In Belgium	102	" "
In France	118	" "
In Germany	118	" "
In the United States	138	" "

From this it will be seen that the cost of living in the United States, compared with that of France, is in the ratio of 138 to 118, or 117.8 per cent.—that is, it is 17.8 per cent. higher than in France. Similarly, the cost of living in the United States is

17.8 per cent. higher than in Germany,

35.3 per cent. higher than in Belgium, and

38.0 per cent. higher than in the United Kingdom.

This is not a complete statement of the situation, inasmuch as it takes into account only those articles, and in only those proportions, used by the British workingman in his dietary. His standard would doubtless rise in moving to the United States; but for the *same standard of living,* the foregoing comparisons hold.

Budgets. The Board of Trade, in its investigations, made a study of budgets of workingmen's families in the five countries studied. Below will be found a brief résumé, presented on a per capita basis:

EXPENDITURES FOR FOOD PER CAPITA.

	Per week.	Per year.
United States	$1.78	$92.33
France	1.20	62.40
Germany	.98	50.96
United Kingdom	.98	50.85
Belgium	.94	49.12

Thus the actual expenditure of the average American workingman for food in the northern part of the United States is seen to be greater than that of the average workingman in France by 48.0 per cent.; greater than that of the workingman in Germany by 81.2 per cent.; greater than that of the workingman in England and Wales by 81.6 per cent.; and greater than the amount spent by the workingman of Belgium by 88.0 per cent.

The United States and England and Wales [page 68]. The English-American comparison of the cost of living, as ascertained by the British Board of Trade in 1909, rests

on returns secured from but three trades—the building, the engineering, and the printing trades. . . .

On the average the wages of the American workman were higher than those of the English by 130 per cent.; his hours of work per week were fewer by 4 per cent; his payments for rent for the same kind and amount of house accommodation were higher by 107 per cent.; the retail prices of his food, weighted according to the consumption shown in the British budgets were, as has earlier been shown, higher by 38 per cent. Put more briefly, it is found that while the wages of the American workman are the higher by 130 per cent., his expenditures for food and rent combined, on the British standard of living, are the higher by only 52 per cent. A much greater margin over the expenditures for food and rent is, therefore, available in the United States than in England and Wales. This margin, says the report of the Board of Trade, "makes possible a command of the necessaries and conveniences of life that is both nominally and really greater than that enjoyed by the corresponding class in this country (England)."

COTTON-MILL EFFICIENCY AND MACHINERY

[From the Tariff Board Report on Cotton Manufactures, the following extracts are taken, showing the use of automatic machinery in America as compared with England. (House Document No. 643, 62d Congress, 2d session, p. 468.)]

Factory organizations compared. Contrary to the prevailing organization in the cotton industry in England, the mills in this country have both spinning and weaving departments.

The spinning mill is, as a rule, equipped with sufficient machinery to produce all the yarn, both warp and filling, necessary for the continuous operation of the weaving mill. There are a few mills manufacturing specialties, where, on account of the variety of yarns required and the small quantity of each number used or the special processing necessary, it is impracticable to operate a spinning mill, and in such cases the yarn is purchased from spinning mills manufacturing special numbers of yarn, for which they find a ready market. Where it is necessary for a spinning mill to manufacture a wide range of yarns for the supply of the weaving mill, it follows that the manufacture cannot be carried on as economically per unit of production as in the mill where the production is limited to the manufacture of but few numbers of yarns.

Many American mills, especially in the North, produce a wide variety of cloths, involving the use of many different kinds of yarn from coarse to very fine. On the other hand, some mills weaving principally plain constructions are re-

quired for their own needs to spin only a narrow range of yarns, frequently but one warp and several fillings. In the case of the former mills, the American practice puts them at a disadvantage with English spinning mills which produce yarns of more uniform count for a regular market. In the case of the latter class of mills the advantage of the specialization which exists in the English industry seems to be fully offset.

In the United States most of the yarn is manufactured on ring spindles, as against the English method of mule spinning. The production of yarn by ring spinning is greater per spindle than mule spinning, though the mule-spun yarn is more even in density and softer in finish. . . .

Cotton waste. Only a part of the raw cotton input of the mills reaches the yarn in its finished state. Through each operation, as picking, carding, spinning, etc., there is a loss of some of the original stock known as waste. A part of this waste, which is chiefly due to evaporation, is not recovered, and this is termed "invisible waste." The percentage of waste in a mill is a varying quantity, due in part to the length of the fiber of the raw cotton and the fineness of the number of the yarn spun. In mills producing coarse yarns where it is possible to rework part of the waste the loss is not over 10 per cent. of the input of raw cotton, while in the mills producing higher or finer numbers of yarns the loss will approximate 35 per cent. All of the waste, except that known as invisible waste, which does not amount to more than 3 or 4 per cent., is recovered and reworked or sold. . . .

Conditions influencing efficiency. The efficiency of the weaving mills is affected by numerous conditions, making it impracticable to accurately present these conditions in any tabular statement. No two weaving mills are affected by exactly the same conditions, there being a difference either in the loom equipment, the size and breaking strength of the yarn used, or the organization of the cloth produced.

During the course of the inquiry the agents of the Tariff Board found that a number of mills originally constructed to manufacture plain print cloth are now producing fancy cloth of simple design or construction. The manufacturers stated that this change was necessitated by a lack of demand for the print cloth, and that while the production of each loom appropriated for fancy constructions was decreased, the better demand for fancy cloth more than offset the loss due to decreased production. This change often made it necessary to weave a much narrower cloth than that for which the loom was best adapted, and there is also a loss that must be reckoned due to idle looms where any considerable amount of changing from one construction to another is necessitated.

The breaking of a warp or filling yarn requires that the loom be stopped and the difficulty be adjusted. Some of the looms are equipped with automatic stop-motion attachments, which automatically stop the loom whenever a warp or filling yarn is broken. This makes it possible for a weaver to attend a greater number of looms, a lesser degree of watchfulness being required.

Some of the factors which affect the efficiency of a cotton mill are discussed in connection with the following tables.

Weaving costs with automatic and plain looms. In order to show the exact difference in cost of production that can be directly attributed to the efficiency of a plant, the following illustration is given:

(In . . . the comparisons of costs which follow, the labor cost of yarn per pound of cloth includes the total labor in the "spinning mill," or through the spooling process, and the labor cost of weaving per pound of cloth includes all the remaining productive labor in the mill. This also applies to the division of the works expense in the cost of yarn and weaving) . . . [One table omitted here.]

The exact difference in the cost of manufacture between plain and automatic looms under similar conditions is shown in the following illustration:

	Automatic looms.	Plain looms.
Width, linear yards per pound	38½ — 5.50	
Sley x picks	64 × 64	
Warp and filling yarns		
Labor cost of yarn per pound of cloth	0.033012	0.033254
Labor cost of weaving per pound of cloth	.028110	.046250
Total labor cost per pound of cloth	.061122	.079504
Works expense cost of yarn per pound of cloth	.016719	.017036
Works expense cost of weaving per pound of cloth	.013300	.014660
Total works expense per pound of cloth	.030019	.031696
Depreciation cost per pound of cloth	.017988	.018765
Total conversion cost per pound of cloth	.109129	.129965
Cotton cost per pound of cloth	.165067	.165067
Total cost per pound of cloth	.274196	.295032
Total cost per yard of cloth	.049494	.053255

In this comparison two costs are given on the same cloth woven in the same mill, but one on automatic looms and the other on plain looms. It will be seen that the total cost per pound of cloth on plain looms is a little over two cents higher than that on automatic looms, this difference being almost entirely in the labor cost of weaving. Reduced to a yardage basis, this results in the cost on plain looms being over one-third of a cent per yard higher than that on automatic looms.

Age of machinery. Another factor which determines the efficiency of a mill is the age of machinery. Table 147 [omitted here] shows the age of the spinning spindles and looms in the mills covered by the investigation of the Board.

The age of machinery affects the cost of production in a number of ways:

(1) The older a machine gets the more frequently it is subject to breakdowns, thus reducing the productive capacity of the mill during the time the machine stands idle, and thereby increasing the overhead charges per unit of product.

(2) It increases the repair expense of the mill.

(3) To the extent that new machines are put on the market capable of a greater output within a given period of time,

either through greater speed or through improvements which make it possible for one employee to attend a greater number of machine units, the old machine tends to increase the relative cost of production of the mill, as compared with mills using more modern machines.

To this extent a knowledge of the age of the machinery in a mill is of great value as tending to explain differences in cost of production for the same products in different mills, and also aiding in arriving at a conclusion as to the up-to-dateness of the industry as a whole in so far as it has been covered by the investigation.

In this connection it may be added that while the investigation of the Board covered only about 20 per cent. of the total number of cotton spindles and looms in operation in the country, it is fairly representative of the conditions in the industry as a whole. . . .

As will be seen from table 147 [here omitted] over 39 per cent. of all the spindles and over 46 per cent. of all the looms investigated were not over 10 years old, and 78 per cent. of all the spindles and over 74 per cent. of all the looms were not over 20 years old. Twelve and five-tenths per cent. of the spindles and 17 per cent. of the looms were from 20 to 30 years old, while 9.3 per cent. of the former and 6.9 per cent. of the latter were from 30 to 40 years old. Over 10,000 spindles and 532 looms, constituting 0.2 and 0.4 per cent. of the respective totals were from 60 to 65 years old.

Proportion of domestic to foreign machinery. It will be seen [from table 148, omitted here] that by far the greater part of all kinds of machinery, except mule spindles, is of domestic make. Thus, of the looms, at least 99.7 per cent. is of domestic make, and only 0.3 per cent. foreign. Of the ring spindles, 99.9 per cent. is domestic and 0.1 per cent. foreign. Of the roving or jack spindles, 85.8 per cent. is domestic and 14.2 per cent. foreign. The only exception, as stated, was in the case of mule spindles of which 83.1 per cent. is foreign and 16.9 per cent. of domestic make.

Loom production. [page 494]. The table [153, here omitted] shows that the production per weaver per hour on 29 of the 31 different kinds of cloth was very much greater in the United States than in England, reaching in some instances to five times as much. The reason for this is shown in the column, "Number of looms attended per weaver."

In England the weavers on sample number 14 of the cloths tended two looms, on sample No. 89 three looms, and on the other 29 samples four looms each.

In the United States the number tended on most of the cloths ranged from 6 to 28 looms per weaver. On 7 samples as low as 3 looms per weaver were operated in the United States, the average in 2 mills being 5 looms and in 4 mills 6 looms each. On samples 30 and 31 the average number of looms tended in this country was the same as in England.

The column "Speed of looms in picks per minute" shows that on 22 samples the speed of the English looms exceeded that of the United States looms. On 2 samples it was the same in both countries, and on 7 samples it was less in England than in the United States.

The column "Yards produced per loom per hour" shows that owing to greater speed of English looms on 22 samples the English production per loom is higher; on 5 samples it was the same as in this country; and on 4 samples it was less in England.

In the table comparison is made of English looms with the automatic as well as the plain looms used in the United States. The number of plain looms attended by one weaver in the United States greatly exceeds the number attended in England.

As the automatic looms in use in Lancashire form less than 1 per cent. of the total looms there, they are not included in the comparative production shown in this table. Their use, however, is growing in England, though slowly. The report of the British tariff commission shows that in 1905 there were "only about 1000 of these working in England," while in May,

1911, there were 5409 automatic looms in use in Lancashire in a total of 741,260 looms of all kinds in use there at that date. It is estimated that there are at the date of this report nearly 10,000 automatic looms in Great Britain, as against approximately 220,000 in the United States.

Factors limiting automatic looms. Several reasons are advanced for the delay in the more general adoption of the automatic loom in England. For one thing, the automatic loom costs about two and a half times the ordinary plain loom, and this has deterred many English mills already equipped with plain looms from adopting them. Again, English mills do not run such a large number of looms on a single-standard fabric as do American mills, and the automatic loom has not been found so suitable as plain looms for the varied Lancashire trade in dhoties and other fancies. Furthermore, the automatic loom requires stronger and better warp yarn than the plain loom, for the breakage of a single warp thread stops the loom. The American mills use strong ringspun warp yarns; while a large portion of the English mills, producing mainly for the poorer classes of the Orient and other regions, have to size heavily to make goods cheap enough, and they ordinarily use a much lower grade of yarn than would American mills for fabrics that pass under the same trade name. The warp yarns used in the bulk of English cloths are mule spun; and since they are soft twisted to enable them to take up a larger amount of sizing and to give the required feel to the cloth, they are not so suited to the automatic loom as are the stronger American yarns.

An additional reason for the limited use of the automatic looms appears to be the objection to them of the labor unions, which have been afraid that they would be used to displace labor and to throw more work on the weaver without proportionately increasing his earnings.

Men and women are employed in weaving both in England and in the United States. It is probable that upon the whole there is little difference between the amount of work

done by men weavers and by women weavers. The production of the men weavers is, if anything, slightly greater. As has already been shown, there is a difference as between England and the United States in the practice of supplying weavers with assistance. In England a weaver has assigned to him a given number of looms, and is commonly required to do all the "laboring" connected with these looms. In the United States the weavers have, as a general rule, no helpers, but the work of oiling, sweeping, and carrying yarn and cloth is done by operatives known as "oilers," "sweepers," and "filling carriers," etc., employed by the mill. In a number of the American mills for which information was secured the wages of oilers and other employees mentioned amounted to slightly over 7 per cent. of the wages of the weavers. This percentage may therefore be regarded as the amount of assistance which the American weavers receive in their work. As the English weavers usually pay their own help, the percentage representing the assistance received by American weavers should be taken into consideration when comparing the amount of work done.

THE MINIMUM RATE POLICY

[The following extracts have been made with the assistance of the author, D. A. McCabe, assistant professor of economics in Princeton University, and are printed with the publishers' approval. These selections comprise parts of the Introduction, pp. 10–16, and parts of Chapter II, found on pp. 83–106 (rate grouping by competency) and on pp. 114–119 (wages and efficiency), from The Standard Rate in American Trade Unions, Johns Hopkins University Studies in Historical and Political Science, 30th series, No. 2, 1912.]

The standard rate as a minimum [page 10]. The maintenance of standard rates has always been a leading feature of American trade-union wage policies. The unions have from the first sought to attain their primary purpose of advancing wages by substituting collectively established rates of wages for those which their members could obtain in isolated wage bargains. Almost universally their efforts in this direction have taken the form of the establishment and enforcement of standard rates. . . . The standard rate is ordinarily expressed as a minimum rate. Members are allowed to receive more than the standard rate, but for a member to work for less, unless specifically exempted by the union, is a violation of the union rule. The establishment of a standard rate does not, therefore, necessarily secure to the unions complete participation in the settlement of the wage rate to be paid in each individual case. Such full participation would require that the union rate should be the actual rate paid to each workman. Union piece prices are almost always the rates actually paid, for there is ordinarily no good reason why the employers should pay one member more per piece than another for the same kind of work. Standard time rates, however, are, with few exceptions, not only nominally but actually

minimum rates, leaving it necessary for individual settlements to determine in each case whether and to what extent the rate to be actually paid shall exceed the standard.

Piece rates as contrasted with time rates are therefore intrinsically better adapted to collective action. Since those who are working by the piece on the same kinds of product or parts of a product ordinarily are paid at the same rate, they all have a common interest in the rate. But there is no such advantageous rallying point in the matter of time wages. Indeed there is a natural tendency in time wages to variation on account of differences in competency among the workmen. In the case of the piece rate, or of the normal work day, on the contrary, the union makes a uniform demand, which is assumed to advance the interests of all alike, and can be easily made the subject of union bargaining for the group as a whole.

Difficulty of rating time workers. Bargaining for time wages thus presents an inherent difficulty. It is not reducible to a uniform demand which is to affect all alike. On the other hand the policy of establishing a distinct time rate for each individual worker has not commended itself to the unions. This policy would give the union full control of actual wages, if it could be enforced; but the union rate would in each case apply to an individual only. There would be collective action, but not for a rate with collective application. As actually in vogue, the standard time rate may not give complete union determination of actual wages; but it does make possible a rate of collective application. It has the advantage of simplicity as a means of determining wages for a considerable number of men in collective bargaining and as an obligation to be enforced by the union. In choosing to enforce minimum time rates rather than actual individual rates the unions have surrendered a possible complete participation in the determination of actual wages in favor of a kind of union rate which makes much more feasible the establishment by union bargaining, or—in the absence of a union

agreement with the employer—by collective enforcement, of the rates adopted by the union. . . .

Problems in adjusting the minimum [page 15]. The questions of chief interest in the employment of the standard time rate grow out of the fact that, as workmen are found, there are variations in efficiency in practically every group of workers. If the union is to secure effective participation in wage determination the minimum rate must be so adjusted that a relatively large proportion of the workmen covered by a particular rate will be favorably affected in a perceptible way by its existence. The basis chosen for the inclusion of workers within a given rate group very largely determines the difficulty of reaching this result. If the groups are so divided that the members of each are of almost equal wage-earning capacity the minimum rate will stand in approximately the same relation to the wages of all the members of the group. In such a case the use of the standard rate for time wages seems to reap a maximum of union advantage. If, however, the members employed in a given trade or branch of a trade vary considerably in worth to the employer, unless they are grouped according to competency and each group rated correspondingly, any particular standard rate will either be so low as to be of little appreciable support to the most efficient men, or so high as to exclude a number of the least efficient from employment at the union rate.

There is obviously an inherent difficulty in establishing standard rates for workers who are not standardized. Occasionally unions have sought for a solution in the direction of standardizing the workers by dividing them into groups according to competency. But the usual basis of grouping is the kind of work done, not the efficiency with which it is done. An appreciable tendency toward standardization of men engaged in the same kind of work or subject to the same minimum, at least toward the elimination of those below a somewhat variable level of capacity, is fostered in many unions by the requirements as to competency insisted on for

admission to membership. In the great majority of cases, however, the same rate applies to workers of appreciably differing capacities, and the establishment of the standard leaves some members of more than average efficiency under the necessity of individual contracting to secure wages higher than their less efficient fellow members. The influence of the various phases of union policy connected with the maintenance of minimum time rates on the opportunities of the speedier or more highly skilled workmen to obtain more than the union rate, and the extent to which they actually do obtain more, are among the most significant questions connected with union wage policies—and the most difficult of exact answer. . . .

Group rates by kinds of work in a trade [page 83]. The line of demarcation between groups subject to different minimum rates has nearly always to do with the kind of work the members are performing, not with the degree of competency shown in doing work of the same kind. In many trades there are two or more separate kinds of work which are recognized as constituting distinct branches or subdivisions of the trade or craft, each in itself the special, and for the most part exclusive, occupation of those who follow it. Where there are such occupational groups within the membership of a union —and in most time-working trades there are at least two, and often several—the general union policy is to establish different minimum rates for groups recognized as requiring different grades of skill. . . .

The differences in occupation within the membership of a union are often wider than those within what may be considered a trade or craft. Some unions, the so-called "industrial" unions, include workmen of several trades within their membership. . . . In such unions as these, the question of rating naturally resolves itself at the outset into a separate determination for each of the distinct trades.

Many unions are composed of the members of trades which have been much subdivided in recent years in conse-

quence of advances in productive methods. The Garment Workers, Ladies' Garment Workers, Boot and Shoe Workers, Bookbinders, and Laundry Workers, are conspicuous examples of this class. In each of these trades there are subdivisions which require no common apprenticeship, and from one to another of which workers do not ordinarily pass. Each of these subdivisions is virtually a distinct trade or craft from the standpoint of wage rating and is recognized as such by the unions. . . .

[Page 86] Finally, there are unions which maintain distinct minimum rates for groups of workers divided according to the stages of advancement which they have reached in the trade. The International Printing Pressmen's Union is such a union. . . . The Lithographers also fix a series of rates of wide range for their members in charge of presses, according to the size of the press. The Machine Printers' rates for printing wall paper vary in similar fashion with the number of colors printed.

There are many other instances of differentiation in rates within a union according to degree of proficiency. . . . The rates of the Compressed Air Workers vary according to the pounds of pressure under which the work is done. This is partly a matter of physical strength, but also a matter of experience in more difficult work.

There are also unions which set higher rates for groups of men who have specialized on work which is above the skill of the ordinary journeyman. [Various examples] . . . In some trades, too, foremen and men "in charge of gangs" are given higher minimum rates. In nearly all of these unions the higher-rated men are in the same unions with the members following the common branch of the trade. Where men are not separately rated, although engaged regularly on work recognized as requiring more skill than is expected of the average journeyman, it is usually because these men are comparatively few in number, or do not feel the need of a higher union rate to secure higher wages, or because the union does

not wish the work to be assigned to a specialized class of workmen.

Sometimes a distinction is made in the minimum rate for other reasons than differences in trade skill. The Granite Cutters have a higher rate for outside work than for work done under shelter, to compensate for the exposure and greater lack of regularity in the former. Men working on surface machines are also usually given higher rates in this union, not because the work requires greater than average skill but on account of the exposure to the fine dust. . . . Sometimes men in the building trades, particularly bricklayers and carpenters, are allowed by their local unions to take special yearly jobs at rates that amount to less per day than the union minimum. These are usually positions with corporations with large establishments which do their own repair work and undertake no building contracts. These positions are exempted from the regular daily rate because the work is not done in competition with contractors in the trade and because the men earn more in the year than members at the minimum.

Rate grouping by competency, opposed [page 94]. The suggestion has often been made to time-working unions that instead of setting a single rate for all men engaged in the same kind of work they should divide their members into classes on the basis of competency and fix a separate rate for each class. Nearly every important time-working union has at some time or other faced a proposal of this kind emanating from the employers or from its own members. The employers have urged that such a plan would remove the chief defect in the minimum rate, that is, the necessity which the employer is under of paying the less competent men the same rate as the good, average man. Within the unions the proposal has been advocated on the ground that it will allow the less proficient members to obtain work and at the same time make it possible to maintain a high minimum for the better men. This policy in rating has naturally been most strongly urged upon those unions in which the differences in ef-

ficiency among members doing the same work are very large, a circumstance which throws into greater relief the fact that a large number of men of varying competency are subject to the same minimum rate. The classification of men on the basis of differences in competency has not, however, commended itself generally to the unions. Very few unions now look upon this method of rating with favor or are willing to adopt it except as a temporary expedient. Many of the important time-working unions have had experience with the plan and nearly all of these have fought for its abolition, in nearly all cases with success. . . .

[Page 97] The general rejection by the unions of the system of grading members for wage rating proceeds from the belief that it tends to reduce wages through the competition of the more poorly paid with the better paid workmen. It has usually been found extremely difficult to assign members to their grades so exactly as to insure that some men shall not be given a lower rate by the union than the general run of members of the same capacity are receiving and are required to demand. It is difficult, too, to insure that men of lower grades shall be transferred to a higher grade when their competency rises above that of their grade. The unions consider it a further objection that the maintenance of a rate or rates below the point at which a single minimum would be set makes for the retention in the trade of a class of inefficient or partially trained workmen. . . .

Rate grouping in practice. Yet at least two unions in the building trades—the Lathers and the Wood Carvers—still accept it as an unobjectionable method of wage regulation. . . . Local unions in other trades have occasionally found it good policy to divide their members into two or three classes according to competency. When a union is first established in a locality or when a large plant is unionized the local union may find the new members grouped into two or three or even more fairly distinct wage classes. If the members have been working under the piece system there may be a considerable

divergence in wages, particularly if the work is not highly skilled. Under these circumstances it is difficult to find one rate that will be satisfactory as a minimum. The adoption of a single minimum if high would exclude the less capable men, and probably make it impossible to secure a wage agreement with the employer; a single low minimum would not be of much support to the men of higher earning capacity. Rather than take either of these courses local unions have in many cases preferred to establish two or three rates of wages. In such cases, however, the local union expects to eliminate the lower rate as soon as possible, and it is usually urged to do this by the national union. . . .

[Page 103] In some unions there are systems of rating which closely resemble grouping according to competency. Several unions allow young men just out of apprenticeship to work for three or six months or a year at specified rates lower than the regular minimum. Permission to work at a lower rate is granted to young journeymen who have just finished their apprenticeship more frequently by the metal-trades and railroad-shop unions than by the building-trades unions. . . .

[Page 105] Nearly all unions permit members who have become unable to command the minimum rate because of old age or physical infirmity to work for what they can get. There are a few time-working unions which have no rule to this effect, because the nature of the work is such that experience offsets the loss of physical vigor, or because physical vigor counts for so much in the work that old men are not wanted by the employers even at lower rates. Some local unions which have both piece-price lists and time rates, as in a few of the Granite Cutters' branches, provide that old men employed by the hour or day shall be paid according to what their work averages by the piece bill. Some other local unions stipulate that the wages of the exempted men shall be agreed upon by a union committee in conference with the employer. In very few local unions does the number of exempted men exceed five per cent. of the membership, and the

exemption is made on a much more ascertainable basis than competency. . . .

Wages and efficiency in time work [Page 114]. Very little seems to be known as to the differences in efficiency among men engaged in the same kind of work. It is safe to assume, however, that they are not reflected in time-working trades with any exactness by the wages paid, even where there is no union minimum. When the union confines its action in wage rating to the establishment of a single minimum rate for members engaged in the same kind of work, it is obvious that the adjustment of individual earnings to individual capacity is not as likely to be secured as under the piece-rate system. Even where the union does not discourage large outputs, the time wages of the better men do not exceed the minimum in the same proportion that the men show efficiency above the average. It is safe to state that generally when men whose earning capacity is above that of the average journeyman are left dependent upon individual bargaining for wages above the minimum, they do not receive additional wages commensurate with their superior capacity.

Of most time-working unions it can be said, however, that the variations in efficiency within the membership are not as wide as among men in the same trades outside the union. The mere insistence on a minimum rate which is intended to be almost as much, if not as much, as the average member can successfully demand, necessarily excludes from the union men much below the average of competency. Such men cannot obtain regular employment at the union rate, and it is consequently useless for them to retain union membership.

Union tests of competency. But time-working unions do not rely solely upon a high minimum to keep their membership clear of men considerably below the average in competency. Practically all of the skilled trades require that candidates for membership must prove their competency or be vouched for as competent by members who have worked with them. Where the testimony of members on the same "job"

is accepted as sufficient evidence of competency the test is practically reduced to ability to secure employment at the minimum rate. In a number of unions, however, as, for instance, the Plumbers, the Electrical Workers, the Stereotypers and Electrotypers, and the Bricklayers, the candidate must prove his competency by passing a serious examination set by a special board or committee. Finally, many time-working unions attempt to insure that the membership shall be recruited from competent journeymen by recognizing a normal method of learning the trade under union auspices. The apprenticeship regulations of the unions are directed in large part to this end, as are the provisions made by a number of unions for advancement from the status of helper to that of journeyman after a given number of years under instruction in the former capacity.

Minimum as a maximum. The maintenance of a minimum rate by a union also in another way tends to make wages uniform. The fact that a given rate is the "union" rate, and as such becomes the center of attention and the subject of negotiation and even of conflict—this makes it the presumptive rate. Moreover, many employers who are brought with much reluctance to agree to observe the minimum look upon the minimum as a "lump" rate which they have agreed to pay the union for the labor of its members. These employers often take the ground that they should not be expected or can not afford to pay the better men more than the minimum, because they are compelled to pay the union rate to many men who are not worth it. The provisions in agreements noted above for equal increases for all the men are evidences of this feeling. The union officials assert that some employers' associations have a rule against paying men more than the minimum. There is, of course, a greater likelihood of united action against the payment of differential wages when the minimum is established by agreement of the union and the employers as a body.

Competition above minimum. The same forces that lead

to the payment of wages above the average rate where there is no union minimum, however, often operate to cause the payment of wages above the union minimum, even though their effectiveness is reduced by the union regulations noted above. The chief of these forces is, of course, competition. Employers are often compelled to comply with the demands of the more efficient men for higher wages in order to retain them. There are many employers, too, who pay the better men more than the minimum, as a matter of course, as compensation for superior service and as an inducement to the men to put forth their best efforts.[1]

In any attempt to estimate the extent to which men receive wages above the minimum on account of superior efficiency, it is important to bear in mind that the minimum in different scales may stand in very different relation to the modal or predominant wage. The proportion of men receiving more than the union minimum in a trade is frequently large because the competitive wage has increased since the minimum was established. Where the minimum is established by an agreement it is customary to make it binding for a specified period, and if in that time the competitive wage for men increases considerably the employers will frequently offer wages above the minimum to men of no more than average competency. Sometimes the union refrains from raising the minimum when an increased demand for men would make that possible. In 1906 the secretary of the Bricklayers' and Masons' Union cautioned the local unions against putting up the rate when the demand is brisk to a point at which it can be permanently maintained only by throwing some members out

[1] The payment of a wage rate above the minimum is not the sole form of differential compensation. Often the better men receive the same hourly rate but are given more regular employment, the cleanest and most desirable work, and even overtime payment for merely nominal work. Because of such considerations workmen in the building trades will often remain with an employer at the minimum rate when other employers are offering two or three cents an hour more.

of regular employment.[1] A few branches of the Granite Cutters have provisions in their agreements to the effect that if an employer advertises for men at more than the minimum rate he shall pay the higher rate to all in his employ.

The union minimum is sometimes fixed for other reasons below the wage rates of most of the men to whom it applies. The rate may be kept low in order to permit men to secure employment who would not be able to do so if the predominant wage were taken as the minimum. This policy has been followed in some cities by the local unions of masons in the Bricklayers' and Masons' Union. Local unions of the Machinists, too, occasionally set a low minimum rate rather than a starting rate and a higher regular minimum. Again, a group of workers who usually command a higher rate of pay than other journeymen in the trade may not be given a separate union rate. An instance in point is that of cabinet makers or "bench men" in the Carpenter's Union who are given the same minimum rate as machine wood workers.

Proportion of workers getting more than minimum wage. The extent to which differential wages are paid above the union minimum, when that rate is the rate actually paid to the men whose efficiency is about the average, varies widely in different trades. There are trades in which differential payments of this character are very exceptional. Unskilled laborers, such as the ordinary building laborers, are commonly paid one flat rate whether organized or not. The same is largely true of men paid by the day or hour in street railway or railroad service. In union agreements with the street railway companies, the minimum rate is usually the same for all after the first year of service, and the companies almost without exception make this the actual rate. Men in the railroad yard service are paid by the hour and yard engineers,

[1] Annual Reports, 1906, p. 299. Members may not strike for more than the minimum rate. But men may strike to enforce payment of more than the minimum from a contractor who has agreed to pay more and later refuses (Ibid., p. 28).

firemen, conductors, and trainmen practically all receive the minimum rates set for their respective classes. Men employed in railroad shops rarely receive more than the minimum rates, although in these same trades in the contract shops a considerable part of the men receive wages above the minimum. Standardization of workmen and of work and the practice of dealing with large bodies of men as classes tend to standardize the wages paid in the railway service more than in trades calling for similar grades of skill in other industries.[1]

In the building trades, the higher rates in the large cities tend to attract the better men and keep out the poorer and this tends to reduce the variations in competency from the average. The employment of men in larger numbers and the more frequent changing of the men, together with the existence of employers' associations for dealing with the unions, also make for greater uniformity in actual payment in the large cities than in the smaller places.[2] Wages among the Stone Cutters and the Granite Cutters seem to conform more closely to the minimum than in the other building trades. The reason for this in the case of the Stone Cutters has been indicated.

In the printing trades, particularly among the compositors and the stereotypers and electrotypers,[3] and in the metal

[1] The tendency toward uniform rates for men engaged in the same kind of work is stronger in large establishments than in small establishments for the same reasons.

[2] It is difficult to get anything more than estimates of the percentage of men receiving wages above the minimum. The secretary of the Composition Roofers estimates that not more than two per cent. of the members in New York City receive more than the minimum. An official of the Steam Fitters estimates that for his union in New York City the proportion is not less than five nor more than ten per cent.

[3] An officer of the local union of the Stereotypers' and Electrotypers' Union estimates that about 50 out of 650 members in New York City receive more than the minimum. The electrotype finishers, but not the electrotype founders, are included in the organization there. In Boston where both branches are included, the secretary estimates that forty per cent. receive more than the minimum.

trades the proportion of workmen receiving more than the minimum is larger than in the building trades. The diversified nature of the work included within the trade and the consequent differences in experience and skill among the membership, combined with the absence of graded union rates, account largely for the prevalence of differential payments among the Molders and Machinists.[1]

[1] A national official of the Molders' Union estimates that at least thirty per cent. of the members receive more than the minimum. This is the highest estimate obtained for any union. In the *Iron Molders' Journal* for September, 1900 (p. 532), a correspondent declares that there is not a foundry in the country in which some men do not get more than the minimum. In the number for March, 1900 (p. 147), it was reported that in Milwaukee where the minimum was $2.75 "some of our best men get $3.50."

PRICES AND FARM MANAGEMENT

[These illustrations of the relations in agriculture between costs and profitable cultivation are taken from pp. 6–9 of Bulletin 209 of the University of Wisconsin Agricultural Experiment Station (May, 1911), by H. C. Taylor, Professor of Agricultural Economics.]

Prices and crop selection. It is essential to good farm management that the farmer understand the trend of prices in order that he may plant and breed to suit the future market on which his products must be sold.

Within certain regions the question whether one should sow oats, barley, or spring wheat is determined by the relative prices for which these products can be sold. In given regions the choice between corn, potatoes, and sugar beets (crops which require cultivation at the same time of the year) should be determined on the basis of the profit the farmer can make from each of these crops and this depends upon the prices for which they can be sold.

Costs and prices. It has been common to hear the statement "The price should be high enough to pay the cost of production and a reasonable profit." This phrase when properly understood is full of significance. It is a misinterpretation however, to assume this phrase to mean that every producer of a given product has a right to expect and to demand a price which will cover *his* costs and give him what *he* considers a reasonable profit. Costs in a given locality vary greatly because of differences in the men in charge of the farms. Costs vary greatly in different regions owing to differences in soil and climate, the character and abundance of the labor supply and the location with respect to the market.

Costs and the efficiency of the farmer. It usually happens that there is an inefficient producer here and there who is

producing at a cost greater than the price at which other farmers find it profitable to produce enough to supply the demand. Suppose the price were artificially pushed up to a point where the inefficient farmer can make a profit. This would make the enterprise exceedingly profitable to the efficient farmers, and would tend to increase their production, the greater supply would force prices down and the second state of the inefficient farmer would be worse than the first. All who are producing at a loss should change to some other line of production for which their qualifications count for more. It often happens, for example, that a low grade dairyman is a high grade tobacco producer, that a low grade grain farmer can make money in the grazing of cattle, etc.

Costs vary with natural conditions. Low efficiency of the farmer in the given line of production is only one of the causes which may result in costs which exceed prices. As has been stated, costs are greater in some regions than in others. The wheat regions of the world are numerous and widely scattered. The cost, per bushel, of producing wheat and putting it upon the world's central wheat market, Liverpool, varies greatly. During periods when the supply of wheat is increasing slowly and the demand for wheat is increasing at a slightly more rapid rate the price of wheat will tend to remain high enough to retain in the wheat industry the region where the costs are greatest. When, however, as a result of a new discovery or the extension of means of transportation a new and fertile wheat region enters into competition with the old regions it may happen that the supply of wheat will increase more rapidly than the population and to induce the people to consume more wheat per capita the price must be lowered. As a result of the fall in the wheat price some of the old wheat regions will find their costs greater than the prices they can get.

Changes from wheat growing to dairying. This condition was brought about in the wheat industry when the fertile wheat regions of Kansas, Minnesota, and the Dakotas were

made accessible, and poured their abundant supplies of grain upon the markets of Europe. The farmers of the east of England found wheat growing a losing enterprise. Had they understood the cause of the fall in wheat prices they would have known that the one thing to do was to drop wheat growing and take up some other line where foreign competition was not so keen. After a long time this came about, the wheat lands were converted into meadows and pastures and the dairy industry pays well for the efforts expended. Unfortunately many farmers held to wheat production long after it had ceased to yield a profit. In some cases this resulted in bankruptcy which alertness to the price situation might have avoided.

We are not without illustrations of this principle in this country. The falling wheat price due to the rapid growth of the wheat industry in the northwest was an important factor in driving Wisconsin farmers from a system of grain farming with wheat as the money crop into the livestock industry with dairy products as the chief sources of income.

The westward movement of the wheat industry in the north was paralleled by a westward expansion of cotton production in the south. From the old centers in Georgia and the Carolinas the cotton industry extended into the fertile "Black Prairie" of Alabama, sprang up in the rich alluvial of the Mississippi and confluent rivers, and in the Black Prairie of Texas. There was a rapid increase in the quantity of cotton produced. The increased supply was produced at a lower cost than was possible in the old regions. The obvious result was falling prices and an unprofitable industry in the old cotton regions.

Burley tobacco produced at lower costs. Another illustration, which is of particular interest to-day, may be drawn from the Burley tobacco situation in Kentucky. Burley tobacco was first grown in Kentucky in the northern part of the blue-grass region. This is a rough country where the soil soon lost much of its fertility. The industry gradually spread

southward into the counties of Scott, Bourbon, Franklin, Woodford, Fayette and Jessamine. These counties contain the blue limestone region known as the heart of the blue grass country. This is a region of unusual natural fertility. A large proportion of this land had remained in blue-grass pastures from the first settlement of the country. As the tobacco industry commenced to encroach upon this fertile region the farmers found it exceedingly profitable to plow up the old pastures and plant them in tobacco. Under these conditions the supply of tobacco was increased enormously. Prices fell, but the farmers in the new regions of production were making large profits at prices which meant starvation to the growers of the old Burley tobacco centers.

The blame for the falling prices was laid at the door of the tobacco trust, and it is doubtless true that the trust made the situation worse, but the condition which made it possible to increase the supply at falling costs in the new region of production was the cause of the depressed condition of the growers in the old regions of Burley tobacco production. The remedy is for the men who are producing tobacco at a loss to change to some other line of production or else move to central Kentucky, where the fertility of the old pasture lands may enable them to make a profit.

Prices and intensity of culture. The choice of crops and of livestock is not the only point where prices are controlling factors in the management of a farm. There is a close relation between the price of products and the degree of intensity of culture which will prove most profitable. High prices for products usually results in high land values. High land values make it profitable to use land more sparingly. For example fewer acres should be used for a herd of a given number of cows or, what is the same thing, more cows must be kept on a given area than formerly, if the farmer is to secure maximum profits from high-priced land. This means more intensive culture.

These illustrations should be sufficient to show that the

farmer's interest in prices begins long before his product is ready for the market, and that he should study prices as a farm operator as well as a seller of farm products if he would make his farm yield maximum profits.

SOME FINDINGS ON COTTON MANUFACTURES

[THE "Tariff Board" report on Schedule *I* of the tariff of 1909 (Cotton Manufactures), was transmitted by President Taft to Congress, March 26, 1912. In its published form it is a document of 841 pages, in two volumes (House Document No. 643, 62d Congress, 2d session). The Board's letter of submittal contains, in brief summary, the findings of the investigation as to relative costs of production and prices, with reference to the existing rates of duty. We omit the introductory survey of the scope of the investigation but give the greater part of the letter of submittal (pp. 8–17 of the report).]

Cost of equipment. The method of determining costs adopted by the Board does not include the item of interest, so that the cost figures as given show nothing regarding the original investment necessary to carry on the process of manufacture except the item of depreciation. This item is slight so far as cost per yard of cloth is concerned. Obviously, however, the relative advantage or disadvantage of the foreign and domestic manufacturer in competition is affected by the amount of original capital on which interest must be earned. Consequently figures are presented showing the relative costs of completing and equipping a spinning plant and a weaving plant in England and this country, designed to carry on the same line of production. From these figures it appears that the cost of erecting a building is about 40 per cent. greater in this country than in England, the cost of equipment for a spinning mill about 70 per cent. higher, and the cost of equipment for a weaving plant (with plain looms in both countries) about 50 per cent. higher. These figures are for the equipment considered adequate for a given production in the two countries. It varies somewhat according to different methods prevailing in the two countries,

and the figures do not necessarily establish the relative prices of identical machines here and abroad. Where a mill is equipped with automatic looms the cost of the looms is at least two and a half times the cost for a mill equipped with plain looms.

A very small part of the cotton machinery used in this country is imported, a marked contrast to the case of worsted machinery. With the exception of spinning mules, more than 90 per cent. of the machinery is of domestic manufacture. Practically all looms and all ring spindles are of domestic make. Of cards and jack spindles about 15 per cent. are of foreign make. Mule spinning in this country involves only about 20 per cent. of the total number of spindles, and of the mules in use in the mills investigated 83 per cent. were imported.

Cost of yarns. In comparing the cost of making yarns in England and the United States it has seemed essential, in view of the fact that 80 per cent. of English spindles are on mules and 80 per cent. of American spindles on ring frames, to compare the cost of mule spinning in England with the cost of ring spinning in this country. As a rule, mule spinning is a more expensive process, and the production from mule spinning is of somewhat finer quality, even with yarns of the same nominal count. These facts should be kept in mind; but it is evident that the really significant comparison is that between the actual results obtained under the prevailing methods of each country.

In the cost of raw material there is practically no advantage possessed by either country. Any general difference in the price between England and the United States is less than occurs from mill to mill or month to month in either country.

The actual book figures for English mills and American mills show that in comparing the most efficient mill for which we have figures in England with the most efficient mill for which we have figures in this country—and these mills are

typical in both cases—the per cent. of the total English labor cost to the total American labor cost per pound of yarn varies from 78 to 95 per cent. Comparing all of the yarns selected, the English labor cost is found on the average to be practically seven-eighths of the American in the case of these two mills.

In the matter of general expense the difference between the two countries is decidedly greater, thereby increasing the difference in the total conversion cost of yarn. Again, by comparing the two most efficient mills, as referred to above, it is found that the total conversion cost of yarn in England varied from 65 to 79 per cent. of the American conversion cost. The average on all counts taken shows the English conversion cost to be about 73 per cent. of the American.

It should be noted that these comparisons are based upon taking that mill in each country which showed in general the lowest cost on the whole range of yarns. On certain particular counts a lower cost was shown in other mills, so that the figures may be taken as typical for mills of high efficiency. They cover warp and filling yarns not higher than 50's for warp and 70's for filling.

Taking all the mills covered by the investigation in each country, there were wider variations in the American costs secured than in the English costs, due partly to the fact that the English mills were all in the Lancashire district, where wages and other conditions are well standardized, while the American costs were taken from mills covering a much wider area, with much greater differences in labor and other conditions. Another reason for the wider variations in American costs is that the English mills for which figures were secured are all of a modern and efficient type, while some of the American mills included were old and of low efficiency.

In the case of most yarns for which figures are given for the United States the highest conversion cost is 50 per cent. higher than the lowest conversion cost. In a few cases it is nearly double. Consequently the difference in conversion cost would

appear much greater in a comparison drawn between mills of lowest cost in England and mills of highest cost in the United States.

In this connection care should be taken not to confuse conversion cost with the value of the finished yarn. In saying that the cost of manufacturing yarn in an English mill is 72 per cent. of the cost in an American mill, it is not meant that the total cost of English yarn, including the value of the cotton in it, is 72 per cent. of the total cost of the American yarn. As a matter of fact, the difference in conversion cost between the two countries varies from 3.8 per cent. to 11.9 per cent. of the total cost of production in England, including raw material.

It should also be noted that these relative costs do not include yarns of the highest counts or other yarns used largely for special purposes, since the Board was not able to secure sufficiently detailed figures on the higher counts abroad. They do include, however, the great mass commonly manufactured in the United States. It is entirely possible that a comparison of costs on these special counts or qualities would show a different ratio between the two countries than is here presented.

Duties on yarn. . . . A comparison of the cost of production in the two countries shows that in the case of the ordinary warp and filling yarns the present duty is regularly in excess of the difference in cost of conversion. If the relative costs only of the two mills having the lowest cost of production are considered, it appears that the present duty on the types of warps and filling described, ranging from 30's to 80's, is in all cases more than twice the difference in the total conversion cost, and in some cases four or five times the difference. The labor costs on these yarns is from 50 per cent. to 60 per cent. of the total conversion cost.

These figures, as stated, are based on the difference in conversion cost between the two mills of lowest cost. Making, however, a similar comparison between the lowest cost in Eng-

land and the highest cost in the United States, in practically all cases the duty is greater than the difference in the conversion cost. . . .

A somewhat different situation appears in the case of yarns of this character which are of higher counts—on two-ply yarns and in the case of bleached, mercerized, and dyed yarns. For such yarns the ratio of the duty to the American conversion cost is decidedly less, ranging from 30 to 45 per cent. A duty which is 30 per cent. of the American conversion cost would offset the difference in cost when the English conversion cost is 70 per cent. of the American. . . .

Cost of weaving. In the matter of turning yarn into woven fabrics the Board was unable to secure such detailed foreign-cost figures as in the case of spinning, and the relative cost of this process of manufacture here and abroad cannot be stated in the same way. For tariff purposes, however, valuable conclusions may be drawn from a comparison of relative prices under competitive conditions in this and other countries and from a comparison of duties with domestic production costs. These are considered below.

It is necessary, however, to recognize an important difference in the methods employed in the United States and England in this branch of the industry. There seems to be no wide difference between the two countries in the amount of machinery tended or in the output per operative in the spinning of yarn. In the case of weaving the situation is quite different. English looms run somewhat faster than the looms in this country, but the number of looms tended per weaver is usually much less than here. This is in marked contrast to the woolen industry, where the number of looms tended is about the same in the two countries. In the case of plain looms (not automatic) the English weaver seldom tends more than 4 looms, while in this country a weaver rarely tends less than 6, and more frequently 8, or even 12, if equipped with "warp-stop motions." Furthermore, English manufacturers make little use of automatic looms. . . . Where automatic looms can

be used a single weaver commonly tends 20 looms, and sometimes as many as 28. The result is that whereas the output per spinner per hour in England is probably as great or greater than in this country, the output per weaver per hour is, upon a large class of plain goods, less, and in the case where automatic looms are used in this country and plain looms in England it is very much less.

The foregoing statements apply to a comparison of plain looms in the two countries or of plain looms in England with automatic looms here. In the case of other methods of weaving such as dobby, Jacquard, box dobby, box Jacquard, lappet, etc., the difference in output is by no means so great. In the case of dobby looms (without automatic attachment) on some classes of fabric, the American weaver will tend 8 or more looms as against 4 in England; but with the more complicated weaves the ratio seems to be nearer that of 6 to 4, and, in the case of certain fancy fabrics, where the number of looms tended is necessarily 4 or less, the output per weaver is about the same in both countries.

As is well known, wages or earnings are not necessarily an index of the labor cost of any particular process of manufacture. The labor cost per yard depends on the relation between wages and output. An extreme illustration can be shown by figures secured by the Board in Japan. It is true that the wages of spinners and weavers per day in that country are very low, but the number of operatives employed to secure a given output is much greater than in this country. In the case of spinning, the lower wages paid are not offset by the larger number of persons employed, and consequently the amount paid to spinners per pound of yarn is materially less than in this country. On the other hand, Japanese weavers tend only one or two looms, and the lower output per weaver under existing conditions makes the amount paid the weaver per yard of cloth about 80 per cent. of the amount paid in this country where plain looms are used in this country; while compared with the use of automatic looms, the amount

paid the weaver per yard of cloth is greater than in this country.

It must be further noted, however, that the cost of weaving is not merely a question of what the weaver receives per yard. The ratio of other labor to weaver's labor varies greatly from mill to mill and no general statement can be made regarding it. The cost of this other labor, such as foremen, slashers, warpers, drawers-in, loom fixers, is not reduced by the fact that the weaver tends a large number of looms. Consequently the total labor cost of weaving is not reduced in proportion to the reduction of the actual weaver's rate per yard, by the fact that a larger number of looms is tended by one operative.

Keeping the above facts in mind it may be stated that, in the case of a large variety of plain goods, the labor cost of turning yarn into cloth in the United States is not greater and in some cases is lower, than in England. For cloths woven on automatic looms, this is especially the case; but on certain classes of fabrics the same holds true for plain looms due to the greater number of looms per weaver in this country. This does not necessarily indicate any individual superiority on the part of the American weaver. It is a matter of difference in industrial policy, whether determined by the manufacturer or the laborer, and it explains the difference in the methods of production which prevail at the present time. Where the automatic loom is now used in England a weaver frequently tends 20 looms, as is commonly done in the United States.

In the case of finer goods, however, especially figured goods with complicated weaves, the cost of weaving is higher here than in England. This is due largely to the fact that the difference in the number of the looms tended per weaver is less than in the case of plain goods. On a large part of these fancy goods (those requiring more than one kind of filling) the automatic loom cannot be used. Even disregarding the question of automatic looms, the difference in the number of

looms tended per weaver on such fabrics is less than in the case of plain cloths. Consequently the comparatively small difference in output per weaver does not offset the higher wages paid in this country.

Figures are presented in the report showing that although labor costs in the cotton industry are in many cases lower in the United States than in England, yet the actual hourly earnings in this country are, in most of the principal occupations, much greater.

The conclusion that under present methods of production on many plain fabrics the cost of production is not greater in this country is also borne out by a comparison of English and American mill prices. A comparison of such prices on a large variety of these fabrics in England and the United States for the date of July 1, 1911, shows that in the case of plain goods the American price at the mill was in no case much above the English mill price, while in the majority of cases it was lower. It should be noted, however, that American prices of this date, relative to the price of cotton, were somewhat lower than normal. The English prices are the regular quotations for the home market, and are not necessarily the prices for export and for neutral markets. In the case of fancy goods, however, where the looms tended are necessarily less, the American mill prices were in most cases higher than the English.

The subject of prices is referred to below, but the fact that in the case of a number of leading fabrics the American manufacturer is selling at less than is the English manufacturer is corroborative of the statement that plain goods can be manufactured as cheaply in this country as in England. The report also gives information as to the ability of the American manufacturer to compete in neutral markets on goods of this kind.

Cost of finishing. Finishing includes the processes of bleaching, printing, dyeing, mercerizing, etc. It is the general rule in England that the finishing of cotton fabrics is

carried on in establishments separate and distinct from the weaving mills. This is also true in large measure in the United States. Since the converter or the weaving manufacturer must pay the actual commission charges, a comparison of these finishing charges in England and the United States is adequate to show the relative cost of finishing in the two countries.

A comparison of sixty specific samples for which finishing data were obtained shows that in most cases the differences between the charges in the two countries were slight, but that the American charges were slightly lower on most of the samples.

Duties in relation to costs of weaving and finishing. . . . In nearly all cases the duty is more than 80 per cent. of the total American cost of conversion, and in a majority of cases it more than equals the entire conversion cost in this country. There are goods in which the ratio of manufacturing cost to the total cost (which includes the value of the material used) is small, and the actual ad valorem rates of duty—that is, the duties on the selling price of the finished fabric—range from 20 per cent. to 45 per cent., with only four cases in which the duty is over 50 per cent.

The above-mentioned list, as stated, includes only standard goods of simple construction (plain, twill, or sateen). A further comparison is made on 100 selected samples, covering a wide range of fabrics, as sold at retail. It is impracticable to draw any general average from these samples, but the facts for each one are set forth in the report. In general, it may be said that the ratio of duty to domestic cost diminishes as the character of the weave becomes more complicated and the number of looms tended per operative diminishes.

These figures show a large number of costs in which the duty per square yard on the cloth unfinished (in the gray) is more than equal to the total conversion cost. . . . In the greater number of cases the duties are greater than the total domestic cost of spinning and weaving.

These same figures, taken with others presented in the report, show that the additional duties imposed on finishing processes bear little relation to the increased costs of these processes. . . . In the majority of cases, so far as the actual samples are concerned, for which cost figures were secured, the increase in duty is in excess of the total actual increase in cost, due to the finishing processes. . . .

American retail prices. As already stated, many standard fabrics of simple construction are sold by American manufacturers at a price as low as or lower than that of the English manufacturer. On the other hand, the English mill price of finer fabrics is in most cases lower than in this country; but it is only in the case of very few fancy specials that the American mill price is greater than the English mill price by anything like the full amount of the present duty. It does not follow, however, that the American consumer gets his goods at the same price as the English consumer. One of the most interesting results of the investigation is to be found in the facts included in the report regarding the different methods of distribution in the two countries and the greater margin which exists between the price at which the manufacturer sells his goods and the price at which the consumer buys them in this country as compared with similar prices in England. The relation of the tariff to the prices paid by consumers can only be understood by fully comprehending the significance in American trade of the principle of "set prices." This principle is fully explained in the report, and many figures are given to show mill price, converter's price, jobber's price, and retail price.

The most common retail prices for different kinds of cotton cloth are 5, 7½, 8⅓, 10, 12½, 15, 19, 25, 29, 35, and 50 cents a yard. These prices in turn fix the prices which the jobber can charge the retail merchant in order to bring the price of the fabric inside a given "set price" to the consumer, and these in their turn determine the prices which the jobber can afford to pay the manufacturer. The result is that under the

existing system of distribution the effect of any change in cost of production or in mill price cannot be determined except in relation to the "set price" of the retail trade. In some cases a reduction of one cent a yard in the mill price might be just enough to enable the jobber to sell at a price which would bring the goods within a lower retail class, thereby possibly saving as much as 6 cents a yard to the consumer. In another case a reduction in price of 3 or 4 cents a yard might not be sufficient to bring the cloth into the lower class, and in this case the whole reduction in mill price would go to the jobber or retailer, or both, while the consumer would pay the same price as before.

It may be said in general that goods which are sold at the mill at from 8 to 9 cents reach the consumer commonly at 15 cents per yard.

When the mill price is 10 cents per yard, the fabric is thrown into a different classification and will reach the consumer at 19 cents. An increase of the mill price from 10 to 11½ cents would probably not affect the price to the consumer. When, however, the mill price goes to 12 cents, the consumer will pay 25 cents. A further increase in the mill price of 2 cents in this case would not change the price to the consumer.

With a mill price of 14 cents the consumer would still pay 25 cents retail. Where the mill price is, however, 15 cents, the cloth enters another classification and probably reaches the consumer at 29 or 35 cents. It will be seen, then, that an increase of 2 cents, from 12 cents to 14 cents, does not affect the 25-cent retail price, while an increase of 1 cent, from 14½ cents to 15½ cents, may increase the price to the consumer by 10 cents.

The same facts are brought out clearly by a study of the course of mill prices, jobber's prices, and retail prices of the same fabric over a period of years. A good many examples of this are shown in the report. To illustrate by a certain sample quilt: This was sold by the mill in 1908 for 62½ cents and reached the consumer at $1. In 1910 the mill price

went up to 75 cents, an increase of 12½ cents, which increased the retail price paid by the consumer to $1.50.

Another quilt of a little lower grade sold in the earlier period at the mill for 58½ cents; jobber's price, 70 cents; retail price $1. In 1910 the same quilt was selling for 67½ cents at the mill; jobber's price 75 cents; retail price, $1. In the case of the first quilt an increase in the mill price of 12½ cents increased the price to the consumer by 50 cents, while in the case of the other quilt an increase of 9 cents at the mill, in the same year, did not increase the retail price at all. The reason, of course, was that, the second quilt being of a little lower value, the increase did not quite bring it out of the $1 class.

These facts, besides being of interest as showing the relation of the consumer to the producer in this country, are of importance in considering the effect of tariff changes. Assuming that the method of distribution remains the same, it would appear that the same rule would hold, whether the jobber should buy his goods of the domestic or the foreign manufacturer. We have seen that a slight reduction in the price the jobber pays to the producer might mean a large reduction in the price to the consumer. Conversely, a considerable reduction in the mill price might have no effect on what the consumer must pay. For exactly the same reasons, on the one hand, a slight reduction in duty might mean a much more than proportional reduction in price to the consumer, whereas, on the other hand, a very material reduction in the duty might have no effect at all in decreasing the retail price.

This method of distribution is much more firmly fixed in the United States than in other countries. This fact, combined with the lower margin abroad between the mill price and jobber's price and the lower margin between the jobber's price and the retailer's price, as compared with this country, brings about the result that goods which are manufactured at the same cost in England and the United States and sold

at the same price in both countries at the mill nevertheless reach the consumer in the two countries at quite different prices.

English retail prices. A few comparisons may be given here to show the wider margin between manufacturer's prices and retailer's prices in this country as compared with England. Thus one fabric which sells at the mill in the United States at 8½ cents a yard will be jobbed at 11 cents and sold at retail at 15 cents. The identical fabric in England would sell at the mill for the same price—8½ cents—be jobbed at 9.75 cents and retail at 13½ cents.

A fabric selling at the mill in the United States at 10½ cents would be jobbed at 12½ cents and sold to the consumer at 19 cents, or possibly 25 cents. The same fabric selling at the mill in England at a price identical with that paid at the American mill would be jobbed at 11½ cents and would reach the consumer at 15 cents.

A fabric selling at the mill in the United States at 12 cents would be jobbed at 16½ cents and reach the consumer at 25 cents. The same fabric with the same mill price in England would be jobbed at 14 cents and reach the consumer at 19 cents. In the case of these particular samples it will be seen that the price received by the manufacturer is the same in both countries, but that the American consumer pays a decidedly higher price than the British consumer.

General conclusions. In conclusion it may be stated that the foreign cost of spinning is less than in the United States, as shown by the figures above. The same holds true for weaving fancy fabrics, on which the number of looms to the weaver in this country is not much greater than the number of looms to the weaver abroad. On account of the different mill methods in this country, the domestic labor cost of weaving on a large variety of plain fabrics of wide consumption is below the foreign cost. Except in the case of a few special fabrics, and in the case of various manufactured articles, some of which are produced in this country to a very slight

extent, the American industry practically supplies the whole consumption. The imports of yarn in 1910 were less than one-half of 1 per cent. of the home production in pounds. The imports of cotton cloth were less than 2 per cent. of the home production in value. Mill prices are in many cases as low in this country as in the world's markets. Where higher, as in the case of the finer classes of products, they are rarely higher by anything like the whole amount of the duty. The effect of the present tariff, then, in most cases is not so much to add the duty to the domestic manufacturer's price as to secure him the American market; and, in the case of most articles of widest consumption, to prevent the competition of the foreign manufacturer, either in normal or abnormal times. On account of more costly methods of distribution in this country from producer to consumer, the latter pays a decidedly higher retail price than the European consumer, even in the case of fabrics on which the cost of production and the mill price are as low here as there.

COST OF PRODUCTION IN THE STEEL INDUSTRY

[HERBERT KNOX SMITH, the Commissioner of Corporations, submitted to the President, Jan. 22, 1912, a report on the cost of production in the steel industry. Accompanying the report was a letter of submittal which in effect is a summary of the results of the inquiry. This letter is here reproduced entire to show not only the facts and conclusions but the form in which such matters are presented to the President. (Report on the Steel Industry, Part II, cost of production, preliminary report, pp. xiii–xviii.)]

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF CORPORATIONS,
Washington, January 22, 1912.

SIR: I have the honor to submit a report on the cost of production of iron and steel.

The cost of steel making is a basic industrial fact, which bears on tariff legislation, prices and profits in a great industry, and the concentrated control of a great natural resource.

The Bureau has used the actual records of companies covering, roughly, two-thirds of the country's production of iron and steel for 1902 to 1906. These data are most complete. More limited figures for 1902 to 1910 make it clear that these five-year figures substantially represent present conditions also.

The costs of the United States Steel Corporation for the chief materials and products are also given for 1910.

During 1902 to 1906 the steel industry was based on Lake ore, but very low costs for Southern pig iron appear in the report.

"Book costs" and "intercompany" profits. Many of these companies were highly "integrated"; that is, they linked up under one control, through various subsidiaries, ore mines,

blast furnaces, steel works, etc. Their "cost sheets," however, did not correspond with this integration. The costs of each subsidiary were shown as though it were independent, and *included profits paid to other subsidiaries.* To illustrate, one subsidiary of a combination, operating blast furnaces, would pay to another subsidiary, which mined ore, a price for ore that included a profit to the ore company. This price would, however, be entered by the furnace company as a part of its costs. That is, they were "book costs," and they included considerable profits really received by the same interests.

These intermediate profits are very important. For example, the average "book cost" of Bessemer pig iron over the five-year period was $13.89 per ton. "Transfer" profits were $1.79, leaving a net cost of $12.10. (Gross tons are used throughout, except where otherwise specified.)

The bureau deducted these intermediate "transfer" profits for all the important simpler products. The resulting "revised cost" must, however, be handled with great caution. The margin between this revised cost and the selling price is, of course, much larger than the margin over the "book cost"; but, on the other hand, that larger margin must cover all the stages of production, and therefore a much larger investment. The profit above the "book cost" of a subsidiary is to be applied simply to the investment of that company. On the other hand, the profit above the revised cost of an integrated company, carrying through many stages of production, *must be set against that entire investment.*

The Bureau has presented the cost data, combined for a number of companies, in two forms for each product: (1) It gives first the average book cost thereof; (2) it has then deducted the average intermediate "transfer" profits, thus showing the revised cost.

One of these companies, the United States Steel Corporation (hereafter referred to as the Steel Corporation), has also large intercompany profits on transportation, chiefly in carrying its ore on its own railroads. In the Steel Corporation's

costs, which are given later, these "transportation" profits are also deducted; but not here. Only the Steel Corporation has such profits to any considerable degree, and to deduct them in the present combined figures would give an average for all companies which would be true neither for the Steel Corporation nor for the other concerns.

Cumulative effect of cost of ore. A fundamental fact is the cost and profit on ore. Ore is the raw material for iron and steel, and its costs have an underlying and cumulative effect through all stages of production and ultimately on the prices of the finished product. The report shows that there were high intermediate profits on ore going into pig iron, with marked cumulative effect on all finished products.

Cost of steel rails. It is impossible to give here the detailed cost figures of the full report. Simply the general principles are stated, the nature of the information, and its more striking relations to the public interest. An illuminating view of costs in general, however, can be had from an outline of steel-rail production and costs.

Starting with the chief raw materials, ore and coke, the "book cost" of ore for the five-year period was $2.64. The only "transfer" profit in the cost of ore itself was an intercompany royalty of $0.02 per ton, leaving a net average cost of ore of $2.62.

For Connellsville coke, the principal kind used, the cost was $1.43 (net ton), with no intermediate profits.

Passing now to the next step, Bessemer pig iron. Intermediate profits in ore and in coke, as they go into pig iron, are large. Furthermore, these costs, profits, and freights to the furnace are multiplied because it takes about 1.8 tons of Bessemer ore and over 1 net ton of coke for 1 ton of pig iron. The average book cost of the ore for 1 ton of pig iron was $7.36; coke, $3.81; and limestone, $0.43. The so-called "cost above materials," necessary for converting that ore into pig iron, was: Labor, $0.73; other operating cost, $0.80; and depreciation and general expense, $0.76. The total makes a

book cost of pig iron of $13.89. Taking out now the transfer profit, $1.79, there is left a net cost of $12.10.

Advancing to Bessemer rail ingots, there appears a book cost of $17.59. All the preceding intermediate profits, however, have been carried forward in the book cost of the raw material, pig iron. Thus, the total "transfer" profits for ingots were $1.84, leaving a net ingot cost of $15.75.

For heavy Bessemer rails, finally, the book cost was $21.27. This is based on the book cost of ingots. The final transfer profits were $2.47. Deducting these leaves $18.80 as the revised cost. The total difference is thus a very considerable amount. About one-fourth of this revised cost was for labor in all stages of production, as appearing directly in the cost sheets.

In the text, the general principles and form of presentation for other products are the same as for rails.

Rail investment. The relation of these integration profits to entire integration investment may be roughly illustrated here. The price of Bessemer steel rails has been fixed for over 10 years at about $28 a ton. The cost, eliminating transfer (but not transportation) profits, is $18.80 per ton. This leaves a margin of $9.20. The total mining and manufacturing investment (excluding transportation properties) actually behind this steel-rail production, from ore to rails, is from $80 to $55 a ton. On this investment the margin, $9.20, represents a profit of from about 11 to 17 per cent. The margin between revised cost and price must in this way be distributed over the entire investment thus attributable to the product in question.

Large and small companies; billets. A significant fact is the difference between the costs of large companies, which are well integrated, and small companies, which are not. A good example here is Bessemer billets. In this product intermediate profits have also accumulated through ore, coke, pig iron, etc. For the group of large companies the book cost of billets was $19.89; for small companies, $22.54. The dif-

ference was $2.65. But now taking out transfer profits, the cost for large companies was $17.56 and for small companies $21.69, a difference of $4.13 between the two. The large companies represented here included the Steel Corporation, the Republic, Lackawanna, and Jones & Laughlin steel companies.

Part of this difference in favor of large companies must, of course, cover a greater investment, due to higher integration; part is due to superior efficiency resulting from such integration; but part represents also monopolistic control, especially in ore.

In so far as this difference means a larger per cent. of return on each dollar of investment, it is a real difference in industrial position between the two groups. This difference must be considered in any public action affecting both classes of companies.

Other products. The Bureau has not attempted to revise these costs beyond the simpler finished products. As the elaboration increased, the difficulties of revision increased disproportionately. The chief intermediate profits, however, are in the raw materials, ore and coke, and certainly largely included in the pig iron. Accordingly, they are necessarily carried forward into all finished steel products.

A broad survey of "book costs" of steel products can, however, be obtained from the following table. These costs *have not been revised,* and therefore include considerable transfer profits.

UNREVISED BOOK COSTS.

Products.	Total cost.
Open-hearth billets	$20.87
Universal plates	21.82
Structural	26.52
Merchant bars	28.12
Wire rods	27.21
Bright coarse wire (net tons)	29.12
Black sheets (net tons)	39.37
Tin and terne plate	71.23

Integration costs of United States Steel Corporation. For the foregoing combined costs of a number of concerns the Bureau computed the revised costs. But for the Steel Corporation the Bureau received, from the Corporation itself, its book costs of various products and the record which it kept of its own intermediate profits on such products for the year 1910.

Its intermediate profits are the highest and its net costs are the lowest. This fact, and its unique character and dominating position, make the costs of this Corporation a matter of public importance.

The Steel Corporation is by far the most highly integrated concern in the industry. It not only makes pig iron, steel, and most of the various rolled products, besides some more elaborated articles, but it also mines its own ore and coal, produces its own coke, and does all this more completely than any competitor. Finally, it links up its ore mines with its furnaces by its own rail and vessel lines and dock companies. In its control of ore railroads, both north and south of the Lakes, it stands in a class by itself. For this reason its "transportation" profits, as well as transfer profits, are here deducted to show its net or "integration" costs.

The results of this integration and of the Corporation's position in the industry are shown by its total integration costs, as follows:

Integration cost of ore, when mined and transported to lower Lake ports, $2.40. The book cost was $2.88.

Bessemer pig iron, integration cost, $10.21. The book cost was $14.39. Included in both cases is an item of general expense and depreciation—"additional costs"—approximated at $0.50.

Bessemer rail ingots, integration cost, $12.77. Book cost, $17.45. (Including in both cases "additional costs" approximated at $0.60.)

Heavy standard Bessemer rails, integration cost, $16.67. Book cost, $21.53. (Including in both cases "additional

costs'' approximated at $1.30.) The difference here, $4.86, is about equally divided between transportation profit and transfer profit. This division for rails gives a general idea of the importance of transportation profits.

These integration costs are the lowest in the domestic industry. They can not, however, be compared with the combined figures previously given for 1902 to 1906, because of the difference in the kinds of profit eliminated, the difference in dates, and the difference in companies.

The intermediate profits which were eliminated to reach these low costs are the largest per ton in the industry. But they must be set against the most extensive investment per ton of product. The margin between these costs and selling prices must cover a return on all the agencies of mining, transportation, and manufacture, from the ore and coal to the finished product.

Profits on railroads and ore reserves. The most significant profits were those on ore and on railroad transportation. In so far as the Steel Corporation enjoys monopolistic power, it lies chiefly in these two factors.

The Bureau's revisions indicate a rate of profit of about 10 per cent. (for the period 1902 to 1906) on the average total investment of the Steel Corporation in ore (as estimated by the Bureau in Part I of this report, already issued). Whether such a rate of return is reasonable in itself is not of first importance. The essential fact is that 10 per cent. profit is earned on the whole ore holding. Thus, while earning 10 per cent., the Steel Corporation can also carry a vast ore reserve far in excess of its present requirements and so large as to have distinctly monopolistic features, can exercise on the entire industry the undefined but real power that such concentration of the ultimate resource must give, and can assure itself of the certain increment of value that will inevitably occur with the diminishing of our available ore supply so long as the existing conditions of concentration are allowed to continue.

The ore rates on its two ore railroads have been excessive. In so far as they exceed a reasonable return, they not only benefit the Corporation by a high profit on the ore of other shippers, but correspondingly handicap the business of such competitors, who must ship over these roads. These rates were reduced in November, 1911.

Such control of public agencies of transportation by an industrial corporation carries with it just such possibilities of abuse, and raises the question whether the public interest in this industry does not require a segregation of the ore railroads of the Steel Corporation.

Very respectfully,

HERBERT KNOX SMITH,
Commissioner of Corporations.

The PRESIDENT.

THE STANDARD OIL TRUST

[The Standard Oil Company was one of the first corporations to organize in the form of a "trust" in the legal sense. The great wealth of its chief stockholders and its large measure of monopolistic control have made it, in the popular mind, the typical "trust." May 2, 1906, the Commissioner of Corporations issued a report on the Transportation of Petroleum, and May 20, 1907, a report of nearly 1400 pages on the Petroleum Industry, most of it relating to the Standard Oil Company. A few comparatively brief extracts from the later report are here given to illustrate the evidence as to the sources of this company's monopoly power. A number of uncomplimentary adjectives have been omitted in order that they may not distract the student's attention from the statements of facts. The first part of the selection is from Part I, pp. xv–xx of the Report.]

Its dominant position. In 1904 the Standard Oil Company and affiliated concerns refined over 84 per cent. of the crude oil run through refineries; produced more than 86 per cent. of the country's total output of illuminating oil; maintained a similar proportion of the export trade in illuminating oil; transported through pipe lines nearly nine-tenths of the crude oil of the older fields and 98 per cent. of the crude of the mid-continent, or Kansas-Territory field; secured over 88 per cent. of the sales of illuminating oil to retail dealers throughout the country, and obtained in certain large sections as high as 99 per cent. of such sales. It also controlled practically similar proportions of the production and marketing of gasoline and lubricating oil. While handling a much smaller proportion of the oil, both crude and refined, in the Gulf and California fields, this fact has little significance as to its control of illuminating oil, gasoline, and lubricating oil, for the reason that the crude of those particular fields produces a

comparatively small per cent. of these products and is used mostly for fuel.

The Standard has as its only competitors in the refining business about seventy-five small refineries, whose total consumption of crude oil is less than that of a single one of the Standard, to wit, the Bayonne refinery, and less than one-fifth of the Standard's total consumption. Over fifteen of these competitors are dependent for their supply of crude oil upon the Standard's pipe lines, and are so restricted by this dependence as to be capable of little effective competition or growth. In the pipe-line business of the eastern and mid-continent fields it has up to the present but one competitor of any significance—the Pure Oil Company—and that competitor's pipe-line business is not more than one-twentieth of that of the Standard. . . .

History of form of organization. Starting with the partnership of Rockefeller, Andrews & Flagler, formed in 1867, in 1870 these interests took the corporate form of the Standard Oil Company of Ohio, with a capitalization of $1,000,000. At that time they controlled not over 10 per cent. of the refining business of the country. Within ten years from that date the process of combination under these interests had been so rapid that they admittedly controlled from 90 to 95 per cent. of this branch of the oil industry, and their control of the pipe-line business had increased with equal rapidity. This commanding position having been gained, in 1882 they concentrated their holdings under the Standard Oil Trust, which included the entire stock of fourteen companies and a majority interest in twenty-six additional concerns. The capitalization of the trust was $70,000,000 and the appraised valuation of its property over $55,000,000. Nine individuals, acting as trustees of the trust, owned together on that date more than $46,000,000 out of the $70,000,000 of the trust certificates issued. . . .

In 1892, as a result of a legal attack on this form of organization, the trustees announced that the trust would be

dissolved, and a process of so-called dissolution took place. This in no way, however, affected the original control of the aforesaid individuals over the entire concern, because the stocks of each of the various subsidiary corporations were not returned to their original holders, but were allotted to the holders of trust certificates on a *pro rata* basis, with the result that the trustees, who had previously held the majority of the trust certificates, now held a majority interest in each one of the constituent companies.

In 1898 contempt proceedings were started against the Standard Oil Company of Ohio on the ground that it had not withdrawn from the trust. Thereupon, pending the decision, these interests selected the Standard Oil Company of New Jersey as a holding corporation for the constituent Standard companies, and increased its common stock to $100,000,000 for that purpose. This company then gave its own stock in exchange for the stocks of such companies. This change, like the previous one of 1892, as was its obvious purpose, left the monopoly power of the Standard capitalists undisturbed. The same group of men who had been holders of a majority of the trust certificates, then of a majority of the stocks in the subsidiary companies, now became holders of a majority of the stock of the controlling New Jersey company.

The outstanding stock of this company is about $98,000,000. It controls at least 10 refining companies, 4 lubricating-oil companies, 3 crude-oil producing companies, 13 pipe-line and other transportation companies, 6 marketing companies, 16 natural-gas companies, and 15 foreign concerns, besides having close affiliations with a considerable number of other concerns. . . .

Relations to railways. It is of the utmost importance to indicate clearly those fundamental facts that form the basis of the Standard's power. The monopoly of this concern has never rested on ownership of the source of supply of crude oil. Not over one-sixth of the total production of crude in the country in 1905 came from wells owned by the Standard

interests. It cannot be too strongly emphasized that its growth and present power rests primarily on the control of transportation facilities in one form or another. Additional means of domination have been found in local price discrimination and other unfair competitive methods in the sale of products, as well as in the elimination of the jobber; but throughout its entire history the factor of transportation has been the keystone of its success.

The . . . railway discriminations obtained by the Standard in its earlier years as against its competitors did more than all other causes together to establish it in its controlling position. Later, when the rebate, *per se* (that is, the actual, physical repayment of part of the freight rate), was substantially abandoned, the Standard was able, by compelling the coöperation of the railroads, to establish in place thereof a system of secret or open discriminations in rates in its own favor, covering almost the entire country and of such a nature that throughout large sections it could sell and make a profit on oil at prices which left no profit for competitors. The existence of many such important railway discriminations was set forth in full in the report of the Commissioner on the Transportation of Petroleum, in May, 1906; and as a result of that report all the secret rates which had been discovered were discontinued, and the discriminations in open rates have largely been abandoned.

Pipe-line system. This system of railway discriminations allowed the Standard to control substantially that link in the business that lies between the refinery and the consumer. By means of its great pipe-line system it also controls the gap between the producer of oil and the refinery. It has now a pipe-line system of more than 40,000 miles, covering completely the Appalachian, Lima-Indiana, Illinois, and mid-continent fields, with great trunk lines running to the seaboard and to the great markets and distributing centers where its largest refineries are located. All attempts on the part of others to construct competing pipe lines have been . . ,

opposed by the Standard, and usually with success. By means of . . . litigation and preëmpting of right of way, by the aid of railroads which refused rights of way across their lines and adjusted their rates so as to injure competing pipe lines, by paying local discriminating premiums for crude oil in the limited areas reached by rival lines, the Standard has been able to practically prevent the rise of any efficient competitor in the pipe-line business from the older fields to the Atlantic seaboard or has destroyed or absorbed rivals already established.

Having thus established and maintained its monopoly of the pipe-line business, it has in substance refused to act as a common carrier or to transport and deliver oil for independent producers or to independent refineries, and, where making any rates at all for such transportation, has made them at least as high as the railroad rate between the same points, although the cost of pipe-line transportation is very much less.

The economy of pipe-line transportation as compared with that by rail is a vital consideration. A refiner wholly dependent on railroads for his crude supply cannot hope to become a factor of much importance in the industry. This imperative condition of rail-transportation costs has fixed the location of most independent refineries near the oil fields and has restricted most of their sales of the refined products to the comparatively small adjoining sections. On the other hand, the Standard's comprehensive pipe-line system has given it the choice of strategic positions for its refineries near to the largest distributing and exporting centers of the country.

Conditions making price discrimination possible [Part II, pages 27–29]. The methods of marketing oil products lend themselves to this practice of price discrimination. Illuminating oil and gasoline—and the same is in less measure true of other petroleum products—are not to any large extent sold at central markets or through jobbing concerns independent of the refiner. The Standard Oil Company sells most of its

illuminating oil and gasoline in the United States directly to retail dealers at their own towns. They are largely delivered to retail dealers at their own stores by means of tank wagons. Consequently the prices of oil and gasoline are in general purely local prices. The retail dealer is ordinarily not familiar with prices charged in other towns or in central markets, but even if he were he could not take advantage of lower prices prevailing elsewhere to buy oil there and bring it into his own town. The cost of transporting oil in barrels, particularly in less than carload lots, is higher than in tank cars. Moreover, tank-wagon delivery is so much more convenient than barrel delivery that the retail dealer is ordinarily unwilling to buy barrel oil even at a lower price.

The Standard Oil Company has established the system of tank-wagon delivery in the larger towns in all parts of the United States and in a large proportion of the smaller towns in the more populous sections. ["Of the towns in which deliveries of oil by tank wagon were reported, such deliveries were made by the Standard Oil Company or some affiliated concern in 97.7 per cent." Part I, page 20.] The business of its competitors is largely confined to a limited area and to a limited number of towns within that area. In towns and sections where there is no competition the Standard can charge monopoly prices, and by reason of the high prices thus obtained it can afford to reduce prices in competitive areas and towns to a point which leaves no profit for the independent concern.

Independent concerns are compelled to confine their business to a limited area and usually to a limited number of places in such area, first, by reason of the fact, already stated, that delivery in barrels is either more expensive or less satisfactory than delivery by tank wagons; and second, because the limited volume of their business does not permit them to establish tank-wagon delivery in many places, since, in order to reduce the cost of tank-wagon delivery to a reasonable amount per gallon, it is necessary that a concern should secure a considerable

volume of business in each town it enters. Only a concern with enormous capital could afford to establish a marketing system in competition with that of the Standard throughout the entire country and thereby force the Standard, if it desired to cut prices, to sacrifice profit on its entire business.

It is clear from these considerations that the Standard has an enormous advantage over any of its competitors in the marketing of oil. By a vigilant policy of aggressive attacks on competitors competition is kept strictly localized and scattered, and thus easily controlled. The Standard can make huge profits on its total business while reducing the profits of its competitors to a small amount, or even forcing them to sell at a loss.

Relation of differences in prices to profits. The significance of the extraordinary differences in prices charged by the Standard as among different sections of the country or different individual towns can be appreciated only in the light of the fact that a very small amount per gallon constitutes a fair margin of profit on the investment in the refining and marketing of illuminating oil and the other principal petroleum products. The average investment of Standard refining concerns per gallon of product annually is probably not to exceed 2½ cents, so that a return of 10 per cent. on the investment in refining can be secured on the basis of a margin of profit of only about 2½ mills per gallon for all products combined. The investment of the Standard in facilities for marketing illuminating oil and gasoline, etc., averages about 4 cents per gallon of product marketed annually. A return of 10 per cent. on the marketing investment can therefore be secured from a profit margin of only about 4 mills per gallon.

A difference of about 7 mills per gallon in the price of illuminating oil may, therefore, mean the difference between a profit of 10 per cent. on the investment in both refining and marketing and no profit at all. The actual differences in price between competitive and noncompetitive towns and areas, after

making allowance for all possible differences in cost of production and marketing, often amount to several cents per gallon. These discriminations in price may mean, thus, the difference between an enormous profit on investment and little or no profit or even a loss. The destructive effect of the practice of price discrimination upon the business of independent concerns is thus obvious.

Local discrimination [Part II, pages 32–33]. The difficulty in comparing average State prices arising from the uncertainty concerning the relative cost of manufacturing the oil sold in different States may be avoided by comparing only those States which are supplied from a single refinery or from a group of refineries having conditions so similar as to exclude the possibility of any material difference in cost.

Thus, there are a large number of States and parts of States lying on or near the Atlantic seaboard and extending from Maine to Florida which are supplied with illuminating oil principally from a group of Standard refineries situated either at the seaboard (New York, Philadelphia, and Baltimore) or in and near the Appalachian oil field (Buffalo and Olean, N. Y., Franklin and Pittsburg, Pa., and Parkersburg, W. Va.). The differences in the cost of producing illuminating oil at these different refineries are insignificant. Yet the average State prices in the territory supplied by them show a very wide range. In December, 1904, the average price in Delaware, freight deducted, was 7.7 cents. In Pennsylvania the average was also relatively low, 8.7 cents. On the other hand, in the State of New York, itself containing several Standard refineries, the average price was no less than 10 cents; in North Carolina and also in New Hampshire, 10.3 cents; in part of South Carolina supplied from these seaboard refineries, 11.4 cents; in Florida, 12.8 cents, and in part of Georgia supplied from this source, 13 cents, or 5.3 cents higher than in Delaware.

Again, there is a great group of States in the interior of the country, comprising almost the entire Mississippi Basin

from the northern border to the Gulf of Mexico, which are supplied with illuminating oil chiefly from the Standard's refineries at Cleveland and Lima, Ohio, and Whiting, Ind. These three refineries use the same kind of crude oil, and the differences in cost among them are insignificant. Much the greater part of the area is, moreover, supplied from Whiting alone. Yet the prices (freight deducted) within the territory supplied by them show a range from 8.5 cents for Ohio, where several independent refineries are situated, to 13.7 cents for that part of Arkansas which is supplied from Whiting. In North Dakota, South Dakota, Tennessee, Alabama, and Georgia, which are supplied largely from the same source, the prices range from 11 to 12 cents per gallon.

Perhaps the most striking instance of sectional discrimination which has appeared during recent years is on the Pacific coast. In southern California there are a number of independent refineries. The Standard carries oil from its great refinery near San Francisco, several hundred miles by water and rail, and sells it in southern California for much less than the price at San Francisco. The average price, freight deducted, for the southern part of California in December, 1904, was 7.2 cents per gallon, while for the northern part of the State it averaged 12.4 cents per gallon. In Oregon, supplied from the same source the price averaged 15.3 cents per gallon, and in Washington, 15.7 cents. The price in Washington and Oregon was thus more than twice as high as in southern California for the same oil.

Differences in prices among large cities [Part II, pages 34–35]. It is a striking fact that some of the largest cities have, during recent years, paid very high prices for illuminating oil. This is not because there is no independent oil sold in them, but because the Standard prefers to allow the independents to do a small volume of business rather than to cut prices against them. Thus, in December, 1904, the price at New York, which is at the very seat of the Standard's greatest refineries, was 10.5 cents per gallon, and at Boston, freight

deducted, 10.8 cents per gallon. At Worcester, Mass., a much smaller city, the price was only 7.5 cents. The prices at Cincinnati and Cleveland were still lower, 6.4 cents and 7 cents, respectively. The differences in cost of producing and marketing the oil sold in the cites just mentioned is insignificant. The price at Augusta, Ga., was 8.2 cents, as compared with 10.9 cents at Atlanta, 12.1 cents at Charleston, and 12.5 cents at Jacksonville. All these cities must have substantially similar costs. The price at Minneapolis and St. Paul was 7.2 cents, as contrasted with 12.3 cents at San Francisco, 14.5 cents at Seattle, 14.4 cents at Denver, and no less than 16.6 cents at Butte. Only a small fraction of these differences is due to differences in costs.

The evidence obtained from Standard concerns regarding marketing costs indicates that, as among most of the large cities, such differences cannot exceed one-half or three-fourths cent per gallon, and that the extreme difference between the lowest and the highest would not exceed 1 cent per gallon. The differences between Eastern and Western cities are perhaps in part due to higher cost of producing the illuminating oil sold in the latter, but this difference can scarcely exceed 2 cents per gallon.

The prices of gasoline show substantially as great differences among States and sections as the prices of illuminating oil.

WATER-POWER DEVELOPMENT IN THE UNITED STATES

[A REPORT under the foregoing title was made by the Commissioner of Corporations (U. S. Bureau of Corporations) and published March 14, 1912. Some extracts are here taken from the summary on pages 1–34.]

Physical facts involved. Prior to the discovery of electrical transmission of power over long distances, water-power could be utilized only at the power site. This limited its development in most cases to comparatively small units, and almost exclusively to manufacturing enterprises. The introduction of electric-power transmission not only provided a means of supplying distant manufacturing and domestic demands, but also opened up an entirely new power field, namely, the operation of street railways and lighting plants, and enormously increased the relative importance of water-power. Thus the development of water-power (based on installed wheel capacity) for railway and lighting purposes increased from 487,000 horse-power in 1902 to 1,441,000 horse-power in 1907 (the latest date for which statistics are available), or by nearly 200 per cent. In manufacturing industries, where transmission by electricity is infrequent, water-power development during the period 1900–1905 increased by only 11 per cent.

These comparisons suggest the remarkable influence that electrical transmission has had upon the development of water-power in recent years, and at the same time they indicate the peculiarly close natural relationship between the water-power industry and public-service enterprises.

This growing importance of the "commercial" use of water-power, its comparatively recent development, and the con-

sequent lack of an appreciation of its real significance, together with the established connection between commercial water-power enterprises and public utilities, all demand that the public be furnished with accurate and comprehensive information on this subject. This report is an attempt to meet that demand. . . .

Estimates of potential power. The United States Geological Survey estimated the "minimum potential" water-power of the country at 36,916,250 horse-power, and the "assumed maximum" at 66,518,500 horse-power, both figures excluding storage possibilities. "Storage," as used in this report, means the extensive storage of water in large reservoirs so as to regulate the stream flow over considerable periods. It does not refer to the small accumulation of water in a power dam; this is referred to as "pondage." These Survey estimates of potential power were arrived at by multiplying the flow of the stream into 90 per cent. of the fall. . . .

Revision of Survey figures. The Survey estimates require some revision. . . . Reducing the estimates of the Survey accordingly, the totals become 26,736,000 horse-power and 51,398,000 horse-power, minimum and maximum, respectively. . . . As noted above, no allowance for storage has been made in these Survey estimates. Various estimates including storage have been made, but most of them are exceedingly extravagant, and none of them is based upon sufficiently reliable data to warrant unquestioned acceptance. . . .

The water-power centers of the country are the Pacific Coast and intermountain States, the New England States and New York, the Great Lakes Region, and the States entered by the Southern Appalachian Range. Approximately 43 per cent. of the total estimated minimum power of the country is found in California, Oregon, and Washington. Adding to this the power in Montana, Wyoming, and Idaho gives 60 per cent. of the total minimum power in these six States.

Power demand. The total installed stationary prime-moving power of all kinds (steam, gas, and water) in the

United States in 1905–1907 (the latest date for which complete statistics are available) was approximately 23,000,000 horse-power. Of this, 18,858,000 horse-power or 82 per cent. of the total, was generated from steam; 3,423,000 horse-power, or 15 per cent., was developed from water; while 631,000 horse-power or about 3 per cent. was generated from internal-combustion engines. It will be seen, therefore, that only about one-seventh of the total power demand of the country was at that time supplied by water. It seems highly probable that the rapid development of water-power since 1907 has increased its proportion of the total installed prime-moving power. . . .

Developed water-power in the U. S. [page 5]. There is a marked geographical concentration of developed water-power (as well as the similar concentration of potential power set forth above). Thus, nearly 50 per cent. of the developed "commercial" water-power of the country is located in five States, as follows:

	Per cent.
California	14
New York	13
Washington	10
Pennsylvania	6
South Carolina	5
Total	48

An even more marked concentration of developed water-power employed in manufacturing is shown by the following summary:

	Per cent.
New York	30
New England States	36
Minnesota and Wisconsin	17
South Carolina	5
Total	88

Some problems of water-power development. Certain physical and economic facts must be recognized in discussing

water-power possibilities. The production and consumption of power are simultaneous. It is not possible practically to store overproduction for future demands when production may be light. The three principal demands for power are lighting, traction, and manufacturing. If the greatest demand from each of these three sources came at a different period of the day, the total would be so distributed as greatly to reduce the required maximum capacity of the power plant. As a matter of fact, neither of these demands is uniform, while they more or less overlap. Thus, the demand for power for lighting tends to reach a maximum about the time that the demand for transportation is at its height. This overlapping creates what is known as the "peak of the load." It is imperative, therefore, to provide sufficient power to meet this maximum demand. Aside from these daily fluctuations in the power market, there is also a seasonal fluctuation. The demand in winter is greater than in summer. The daily fluctuation, moreover, is greater in winter.

In addition to this fluctuation in the demand there is also a variation in the supply of water-power available. This is due to the fluctuating flow of streams. The flow varies according to the location and character of the drainage basin and according to seasons, and the seasons themselves, of course, vary in different years. A water-power installation, therefore, must also take these factors into account. If the installation provides only for utilizing the minimum flow there must be a tremendous waste of energy during the period of larger flow. On the other hand, as already stated, it is impracticable to install power up to the maximum potentially available.

Remedy for variations in supply and demand for power. The problem of a power producer is to meet these varying conditions of demand and supply in the most economical way. There are several means contributing to this end.

The physical effect of irregularity in the flow of the streams can be partly overcome by storage. In no case, however,

can storage give a stream anything like the power represented by its maximum flow. The amount of storage practicable depends upon the topography of the country and upon the value of the lands overflowed. Up to this time very little progress has been made in storage development.

Aside from storage, it is possible to accomplish something by "pondage," that is, the accumulation of water from day to day in power-dam ponds during that portion of the day when the demand is smallest.

A more effective remedy is in "coupling up," into one unit, two or more sites accessible to the same markets. In practically all cases some of the developments can cease operations when the highest demand is over and accumulate pondage to be brought into use at the period of highest demand the next day. In the meantime the other sites can meet the diminished demand.

The variableness of power supply demand, however, cannot be entirely cured, even by storage, pondage, and "coupling." The effective remedy is the use of auxiliary steam plants. In nearly all cases hydraulic concerns must provide sufficient steam auxiliaries to meet variations not otherwise met.

Advantages of unification of developments. On the other hand, if a power site or a group of power sites provides more power than a single market can consume, all the power can be utilized by "coupling up" two or more markets.

The economic advantages gained by "coupling up" of sites or markets, or both, by means of transmission lines, obviously are great. It is apparent that the most efficient use of water-power from an economic point of view is facilitated by thus gathering into a single unit all the power available for a given market or a group of markets, using the same system of transmission lines. The independent operation of two sites may involve a great waste of energy and capital. In fact, in the case of a comparatively small water-power at a long distance from a market it might be virtually impossible to develop it except in connection with some other site. In the

same way, in the case of storage, there is an advantage in large-scale operations. This is because water gathered in storage reservoirs contributes to every power site below, thus making it advantageous to control all the sites dependent upon a storage project.

Concentration of ownership and control. From the above facts it is clearly seen that in many instances local concentration carries with it great economic advantages. . . .

As this report clearly shows, there is a general and marked tendency toward concentration in the control of water power. Such concentration takes two forms. One is the single ownership of practically all the power in a given locality and the other is the ownership of water-power in scattered localities by a single interest. The two are often found together.

Certain forces in the water-power industry tend peculiarly toward concentration. The unification of developments and of storage, and of markets as well, incident to the highest efficiency in the utilization of water-power, as just described, clearly tend toward concentration of control. Concerns undertaking the development of water-power tend to acquire all available power in a given community because of the advantages of unified operation above outlined.

Another circumstance leading toward concentration of control is the fact that the practical limit of electric transmission of water-power is only about 200 miles. This, it will be seen, makes it virtually impossible for a water-power concern in one part of the country to compete with another water-power concern in a distant part of the country. Aside from this limitation on transmission of power, moreover, is the fact that, as a rule, the total demand for power within an area of practicable transmission is almost invariably greater than the supply of water-power alone. The Bureau's investigation shows that in no considerable area is the supply of power now generated from water sufficient to meet the total power demand. Owing to the large investment required to develop a water-power, and to this general limitation upon the supply,

the most economical utilization of such power frequently results in concentrating all the power developed within a given area under a single control.

A peculiar circumstance which tends to accelerate concentration of water-power ownership is found in the commercial customs prevailing among manufacturers of machinery and supplies for the generation of electricity. Such manufacturers, in order to expand their business, often accept the securities of hydroelectric companies in payment, at least in part, for machinery and supplies. They have thus been led to enter actively into the hydroelectric field. Since the manufacture of such machinery and supplies is largely concentrated in a few hands, this obviously tends toward a corresponding concentration of water-power ownership.

Again, a number of financial houses making a specialty of financing water-power developments have become interested in water-powers, and this has created another class of controlling interests. Furthermore, many officers and directors of equipment concerns and of engineering and financial houses have become individually interested in the same water-power developments, thus bringing about a close relationship between the two interests.

Still again, as shown later, there is an increasing interrelationship between water-power enterprises and public-service interests.

The concentration of ownership of developed water-power has steadily grown until in any given community it is usually all under a single control, or substantially so. Absolute ownership of all the power in a locality by a single interest, however, is not necessary to establish control. If one concern owns the most advantageous sites, and has a strong foothold in the markets, it has a dominating position in that area.

Such concentration of ownership has been most marked in the development of water-power for commercial use. There are, however, a few instances of marked concentration of the ownership of water-power used in manufacturing. The most

noteworthy instance of this is found in the International Paper Co. . . .

Summary of ownership and control by interests [page 27]. The General Electric interests control the water-power situation in large portions of Washington, Oregon, Colorado, Montana, and elsewhere. The Stone and Webster interests exercise control (based largely, however, on management rather than ownership) in localities in Washington, Iowa, and Georgia. The Pacific Gas and Electric Co. practically dominates the power situation in a large number of localities in the northern half of California. The Southern Power Co. controls the power situation in South Carolina and has a strong foothold in North Carolina. The S. Morgan Smith interests dominate the power situation in the vicinity of Atlanta, Ga. The Telluride Power Co. controls absolutely a large territory in Utah and Idaho. The Commonwealth Power, Railway and Light Co., which is a part of the Clark-Foote-Hodenpyl-Walbridge interests, dominates the power situation in the Lower Peninsula of Michigan. The Gould interests control the best of the available water-power sites in the vicinity of Richmond, Va.

Relations of water-power companies to public-service corporations. The preceding discussion has indicated a rather general relationship between water-power companies and public-service corporations. This common control of the agencies of traffic and distribution of light in our cities, on the one hand, and the sources of power for operating them, on the other, is an exceedingly important feature of water-power development. The list of public-service agencies controlled by or affiliated with water-power concerns is rapidly increasing. Generally the relationship between water-power companies and public-service corporations is that of ownership, but there are cases in which there is merely affiliation through common officers or directors or the sale of power.

Some idea of the extent of such common control of public-service corporations by water-power companies is afforded by

the fact that six water-power interests control street railways in 29 cities and towns, electric-lighting plants in 204, and gas plants in 55. . . .

In brief, in the country as a whole, water-power companies, or companies affiliated with them, own or control and operate street railways in no less than 111 cities and towns in the United States, electric lighting plants in 669 cities and towns, and gas plants in 113 cities and towns. These companies, moreover, supply power to municipal lighting plants in a considerable number of cities and towns. Many of these are among the most important municipalities in the States involved. Furthermore, in many cities and towns in the United States all the public utilities—street railways, electric lighting and gas plants—are controlled by water-power interests.

Interrelationship of large interests [page 29]. Beyond the marked concentration of ownership already set forth, there is a substantial and growing interrelationship, of greater or less degree, among a number of these large interests that suggests the possibility, if not the probability, of still greater concentration. In other words, not only is there a tendency toward control of public utilities, including water-power, by large combinations, but there is a tendency toward a substantial relationship among the combinations themselves. This relationship is established in various ways. In some cases one interest owns stock and has directors in a water-power company that is managed or controlled by another interest; in other cases there are directors common to two or more interests that have directors in a third company. Again, a relationship is sometimes established through banking houses. The fact that an individual is a director in two companies does not necessarily point to a close relationship; but it must be admitted that it tends to establish a bond of common interest that might at any time induce and facilitate an actual consolidation. . . .

In this maze of interrelationships, ranging from practically joint control down to personal association in common direc-

torates, is clearly revealed the drift of water-power and public-utility corporations under the control of a few very powerful interests. These connections, some stronger and some weaker, suggest a favorable condition for a very small number of men to consolidate very large interests whenever they may decide it to their advantage to do so. This interlocking of interests through directors, while not necessarily indicating a purpose of monopoly, certainly affords an incentive and a means of combination. . . .

The best development of the resource [page 31]. The utilization of water-power directly tends to conserve the fuel supply of the country, without in any way diminishing the future supply of water-power itself, since water-power is not decreased by use. The power now (February, 1912) required to operate the industrial enterprises and public-service utilities of the country (excluding steam railroads) probably exceeds 30,000,000 horse-power. Approximately 6,000,000 horse-power are now developed by water. It may be conservatively estimated that this represents a saving of at least 33,000,000 tons of coal per year. It is certain that several additional millions of horse-power could be profitably developed from water, thus affecting a still further conservation of coal. It is obvious, therefore, that the early and complete utilization of all commercially available water-power of the country should be encouraged by every proper means. The real waste of water-power is its nonuse. The most efficient utilization of such power, however, tends directly toward concentration of control, through advantages derived from "coupling up" of sites and markets, unification of storage, and relationships with public-service corporations. This has been already brought out. The problem, therefore, is to reconcile this necessity of full and early development of water-power with the proper protection of the public.

THE STANDARD OF LIFE

[This extract from The Standard of Life and Other Studies by Mrs. Bernard Bosanquet, New York, the Macmillan Co., 1898, is reprinted by permission of the publishers. It is taken from the first part of the first essay, which gives the title to the collection.]

If any proof were wanted of how ideas may mold the lives of men and be the moving spirit of their progress, we might surely find it in this deeply significant idea of the Standard of Life. Around it center most of our industrial problems of to-day, and more or less consciously it is made the base for all the forward movements of the working-class. And like all living ideas it is incapable of exact definition; in other words, its significance is inexhaustible, for it has not yet become stereotyped into one narrow usage. It may be taken to include all that is best and highest in human life, or it may be narrowed down to signify nothing more than the satisfaction of the crudest cravings of mankind; and its very elasticity gives it a deeper significance, for by the interpretation which he gives to it you may most surely know the man for what he is.

But though we cannot define the idea, we can, by considering its varying usages, and the part which it plays in our own thought and life, form some estimate of its importance, and perhaps lay emphasis on elements which are too liable to be overlooked.

In the first place, we may consider in what sort of sense we are justified in speaking of a standard in this connection. Behind the fountains and lions in Trafalgar Square is a stone wall, and in this stone wall is something so important that it is hardly ever looked at, . . . certain pieces of metal let into the stone, and marking off lengths which are named as

inches, feet, yards, and furlongs. This is the standard of measurement by which is determined what length shall be called an inch or a foot, and beyond which there is no appeal. Such a standard is an absolute necessity as one of the fundamental ideas upon which civilized intercourse is based; without it there would be nothing to prevent any person from having his own idea as to what sort of length a yard should be. . . .

The necessity of a standard is not confined to the commonplace facts of weighing and measuring. The tuning-fork of the singing master sets a standard to which his pupils must conform, and without which he would himself fall into uncertainty; while in the Ten Commandments we have a standard of morality which has served the human race for countless generations.

How is it with the Standard of Life? It may be objected that this is something too vague and indefinite to be really analogous to these; that there is nowhere any definite statement laid down to which we can appeal, and that it is merely a picturesque way of saying that a man ought not to live like an animal, or some other rhetorical phrase of the kind.

It is true, no doubt, that many of us do not know where to look for our standard, and should be puzzled if suddenly called upon to define it. But this is partly again because it is so important a matter that those who have any standard at all have no need to refer elsewhere; it has become a part of their very lives, and consciously or unconsciously they measure their every action by it. What else does it mean when we say, "I can't live in that street, it is too dirty and disreputable," or, "I would n't turn out a piece of work in that disgraceful state," or "I could n't bring myself to such a low trick as that," or, "I 'd be ashamed to let my children run the streets in that condition"? Or when, again, we so order our lives that the ease and pleasure in them shall not become disproportionate to the amount of toil and exertion? We are simply measuring certain facts by a stand-

ard which we have within us of decent living, good work, honesty, family pride, and strenuousness; and it would not be difficult for any thoughtful man to make clear to himself just what the sort of life was which he had taken as a standard. And he would then find that just so far as he fell below that standard he would consider his life unsatisfactory and a failure.

The great difference between the Standard of Life and other standards seems at first sight to be, that while physical standards are the same for all, the Standard of Life varies for each of us. But this is largely only appearance, and due to our narrow way of regarding the standard. When we take it in a larger sense, we begin to see that the difficulty is not so much that for each of us it is different, but that for all of us it is progressive.

For instance, one way of narrowing the idea is to use it as if it could be expressed in money terms alone, and to speak of the standard of any class as represented by 20s., 30s., or 40s., a week, as the case may be. . . .

Another way of simplifying the question is to divide the community up into social classes, and assign a different standard to each class; and for this view there is a certain justification if we look rather to the probable origin of class distinctions than to the facts as they stand at present. For it seems likely that class distinctions have their origin in differences of function, and that our Standard of Life differs in detail according to the particular function we have to fulfil in the community. In other words, according to the occupations which they follow men's standards will vary in kind, without our being necessarily able to say that this or the other is the higher or lower. If for the present we leave out of sight the lowest class of all, the Residuum (which is the Residuum just because it is made up of men and women who have lost their standard), then we shall find that in certain fundamental respects the standard is the same for all Englishmen to-day. For instance, in cleanliness, morality, and

sufficiency of food, we differ no doubt from person to person; but we could not fairly say that on the whole it is characteristic of any one class to be cleanlier, more moral, or to eat more than any other. But as soon as we get away from these elementary facts, great divergences begin to appear, and those differences begin to show themselves which seem to coincide with what we are apt to call class distinctions. The most obvious differences between classes, those which at once attract the attention to the exclusion of underlying identities, consist in their different standards in such matters as dress, education, housing, and recreation. Certain classes appear to attach more importance to these, and at any rate spend much more money upon them; and we incline, perhaps somewhat hastily, to assume that the more expensive standard must be higher.

The attempt to understand these differences in the standard brings us into contact with some of the most perplexing problems of sociology. The first which stares us in the face is one which has baffled so many young inquirers that it may fairly be called the *pons asinorum* of social reform. Why are there different classes in the community? Why do we not all belong to one class, with one Standard of Life and equal means of attaining it? This is one of the first questions we begin to ask upon emerging from the sublime indifference of childhood to all social arrangements, and one which nobody seems prepared to answer for us. Fortunately for our present purpose no comprehensive answer is needed; it will be sufficient to note briefly one or two of the considerations involved in our social inequalities.

And first, as to the connection between class distinctions and difference of social function. History does not tell us whether there was ever a time in which all men were equal, but we do seem to find that, broadly speaking, the differentiation of society into classes has followed the lines of its differentiation into different functions or employments. Leaving out the disturbing influence of conquest, we see that

the general lines of division between classes coincide with the general lines of division between function in the community. One strong instance of this we find in the feudal system, under which the distinctions between classes and employments were strongly marked, and which is defined as meaning "property held as a reward or in consideration of special services." The propertied class was then, theoretically at least, the class which rendered special service to the State; and, speaking broadly, both the property and responsibility were hereditary.

Again, it is worth noticing that our so-called "middle class" is a comparatively modern growth, and corresponds to a development of the professions and of the organizing branches of industry.

But the most marked illustration of the coincidence of class and employment is to be seen where we find the social arrangement known as caste. The essence of caste, apart from its religious significance, is, that certain functions are committed to certain classes, and that these functions are to a greater or less extent hereditary, so that members of the same family continue to follow the same occupation from generation to generation.

We may say then, that in the past at any rate difference of class has largely depended upon difference of function or employment.

Now if we could find a society in which every one followed the same employment, and in which there was also no distinction of classes, we should have a striking corroboration of the view that the two depend upon each other. A society with literally no difference of employment would perhaps be an impossibility, but we get as near to it as we can in the modern state of Bulgaria. The people of Bulgaria are essentially a race of peasant proprietors, and form a society which is almost homogeneous. The one exceptional class is that of the State officials, the civil service; but this service is itself recruited from the peasant class and shares its characteristics. With

this one exception there seems to be no opening whatever for educated people, and the question has been seriously raised, whether it is of any use to educate, beyond the most elementary stage, boys who have nothing before them but the career of the professional politician or the meager life of the peasant. What that life is we may gather from . . . Dicey's "The Peasant State." . . .

It seems clear, then, that without going so far as to say that differences of employment are the cause of class distinction, or *vice versa*, we are safe in assuming that there is some close connection between them, and that a society which lacks the one is likely to be deficient in the other.

Perhaps the most important characteristic in which we differ from more ancient forms of society lies in the fact that functions and employments are no longer hereditary in any strict sense of the term. It will of course always remain natural, that other things being equal, a father should teach his son his own trade; and thus there will always be a tendency for families to continue in the same employment. But there is no longer any artificial barrier erected by tradition and custom, and it is possible for any boy on leaving school, if his intelligence is not below the average, to choose among a dozen different occupations. This possibility of choice, i.e.; of adapting the occupation of the boy to his individual disposition and capacity, instead of forcing him into the same groove as his ancestors, is of the utmost importance. Plato laid stress upon it in his conception of the ideal State, which was to be organized as a system of classes, based upon difference of function, wherein each man was to do that which he was best fitted by nature to do.

There is probably no way in which it can be ensured beyond fail, that a man shall do what he is best fitted to do; some spend their lives in looking for their vocation and die without finding it. But it is clear that all will have a better chance in a complex society offering many different openings, than in a

simpler one such as Bulgaria, where all members are more on a level, and where there is little variety offered. We find a similar contrast between developed countries with fully differentiated occupations, and new countries where there is as yet little demand for anything but manual labor. In the latter there is no career for the weakly or intellectual; those whose nature and disposition might have found full satisfaction, are in a double sense "out of place" in a primitive society.

And together with this opening up of employments to all the members of a community we find the simultaneous process going on of the breaking down of class barriers. . . .

This means of course an immense widening to the scope of ambition. Professor Cunningham points out ("Growth of English Industry and Commerce," page 410) that the old Burgess society "had this striking characteristic, that the ordinary object of ambition was not so much that of rising out of one's grade, but of standing well in that grade; the citizen did not aim at being a knight, but at being warden and master of his guild, or alderman and mayor of his town. For good or evil we have but little sympathy with these humble ambitions; every one desires to rise in the world himself, and the philanthropic construct social ladders by which the poorest child may rise to the highest ranks, as was done by ecclesiastics in the Middle Ages."

That this breaking down of artificial barriers must in the long run be for good, we can hardly doubt. Man is naturally progressive, both in his wants and in his aspirations; and by the very law of his being, must always—if only left to himself—be seeking after new interests, new plans, new ambitions. But if no interests are there, if the means to carry out his plans are wanting, if his ambitions are thwarted and held in check by custom and tradition, he will never break through the lower circle of desires and satisfactions, which we share with the brutes, and progress will be impossible.

In this progressiveness of the human being we find one rea-

son for those differences in the Standard of Life which we are trying to understand. Not all have yet worked out their freedom from the lower range of desires; for these, satisfaction of the appetites means only renewed opportunity for the repeated satisfaction of the appetites. Of those again who have set their hopes on pressing forward, who see before them a universe of desirable things to be mastered, some have outstripped others and lead the way. In their advance lies the chief hope for those behind: the sight of better things attainable is the chief spur to men to raise their own standard, to seek for themselves and their children advantages for which they would otherwise care nothing.

Another reason for differences in the standard, and one still more in the nature of things than the former, is to be found in the different conditions under which varying kinds of work must be carried on. The scholar eats much less than the artisan who goes through great physical exertion, but he needs instead greater warmth and quiet; just as their tools must always be different, steel and iron for the one and books for the other, so also their standards must differ in kind as regards the surroundings in which they live. That one or the other may cost more in terms of money is a matter of accident, and may indeed tell hardly upon the one who is generally supposed to be in a better position. The young clerk, who earns no more than the artisan, but must wear a black coat; and the governess, whose scanty earnings must provide evening dress, know well enough that the difference in the standard is not in their favor; but the obligation to "dress according" is one which is fully recognized by the working-class, and will always be accepted as a reason why John the clerk should contribute less to the family expenses than Tom the carpenter.

In the mere fact, then, of differences of standard, apart from accidental accompaniments of which we may hope in time to free ourselves, we have both the condition and consequence of vitality and progress in a nation. And indeed we find that what really practical reformers are working for is

not to bring about greater uniformity, but to get rid of certain definite disadvantages to which people of certain classes or occupations are subjected. . . .

To sum up briefly:

1. Every man (above the lowest residuum) has a Standard of Life, by which, consciously or unconsciously, he orders his life, and estimates its success or failure.

2. The standard in England of to-day is the same for all to a certain extent, and in certain fundamental but less obvious facts; but it is essentially progressive, and in more obvious ways it varies greatly from class to class, and according to differences of occupation.

3. These differences do not involve any essential incapacity on the part of any class to raise and maintain its own standard, and therefore every class, as every individual, has both the right and the duty to fix its standard as high as it can attain, there being no limits which are more proper for one class than another.

4. The well-being, moral and economical, of any man or class will be for the most part determined by the standard which he accepts, and for this reason we might formulate this practical ideal for individuals: That every man should aim at giving his children at least as high a standard as his own, and as good an opportunity of realizing it. And that this is not an unnecessary matter to urge, may be witnessed by the fact that large numbers of our very poor are unskilled laborers whose fathers were skilled artisans.

THE INFLUENCE OF INCOME ON STANDARDS OF LIFE

[An investigation of the working class standard of living in New York City, undertaken by the Sage Foundation and by the New York State Conference of Charities and Correction, was carried on in 1907–08 under the direction of Robert C. Chapin, professor of economics in Beloit College. The results were published in The Standard of Living among Workingmen's Families in New York City, by R. C. Chapin; Russell Sage Foundation Publications.

A summary of the findings comparing them with data from other sources, was presented by Professor Chapin, Dec. 29, 1908, at a meeting of the American Economic Association. The paper is divided into two parts: I. Variations in amount of income. II. Sources of income. These extracts comprise most of the first part of this paper. (Publications of the American Economic Association, Third Series, Vol. X, 1909, Papers and discussions of the twenty-first annual meeting, pp. 181–188.)]

Engel's law. Ernst Engel has taught us to look at the apportionment of income among the principal objects of family expenditure, and to see just how changes of income work out in changes in the elements of the standard of living—what kinds of things are added as income increases, what are omitted as income falls. On the basis of returns from 199 Belgian families, gathered in 1855 by Duxpetiaux, Engel made out his familiar table of percentage expenditures for Saxon families of three income-grades. He found that the poorest families, whose income was under $300 of our money, gave for food 62 per cent. of all that they spent. Families having from $450 to $600 spent 55 per cent. for food, and those with from $750 to $1000 spent 50 per cent. for this purpose. Hence he made his generalizations that, as income increased, a less and less part of it was needed for food, and that the percentage of

expenditure for food was therefore an index of the degree of prosperity attained. He applied this standard in a later work to the wretched English peasants whose budgets had been collected by Eden in 1797, and found that the average of their food-expenditure was 73 per cent. of their total expenditures.

Food and other wants. The generalization regarding the tendency of the food-percentage to diminish as the income increases has been verified in many later compilations of family budgets. The Report of the United States Bureau of Labor for 1903, for instance, finds a decline in food-expenditure from 47 per cent. among families having incomes between $400 and $500 to 40 per cent. for families with incomes between $900 and $1000. Colonel Wright's Massachusetts investigation of 1875 showed a decline of 64 per cent. for families having less than $450 a year to 51 per cent. for families having over $1200 a year.

As the demands of the stomach are more easily met out of the larger income, what expenditures are increased to correspond? Engel's Saxon tables shows a constant percentage for housing and for fuel and light, a slight increase for clothing, and a rise in the percentage allotted to expenditures outside of immediate physical necessities from 5 to 10 and from 10 to 15 per cent. as we ascend the income scale. This indicates, that, along with somewhat better provision for food and shelter, it is possible for the family to indulge in more attractive clothing and household furnishings, and to spend something for amusement, for reading matter, and for minor personal indulgences.

Relative saturation point. All reports agree as to the broadening of the plane of living, with rising income, in regard to expenditure for the satisfaction of these culture wants. Not all, however, coincide with Engel's data in regard to a constant percentage for rent and for clothing. Colonel Wright's figures for the United States at large in 1901 show a nearly constant percentage for rent (17 to 18 per cent),

but his Massachusetts report of 1875 shows a decline in the first three income-groups from 20 to 15.5 and then to 14 per cent., followed by a rise to 17 per cent. and a drop to 15 per cent. Recent investigations in New York, that of Mrs. More in her Workingmen's Budgets, and that of the Committee of the New York Conference, agree in showing a steady falling off in percentage expenditure for rent with each increase of one hundred dollars in income. The percentages found in the latter inquiry were 24 for incomes between $600 and $700, and for successive income groups, rising by $100 stages, 22, 20, 19, 18, 16—the last for incomes over $1100. The congestion of population in New York, fortunately exceptional, doubtless accounts in part for the fact that in that city house rent claims one-quarter of the $600 incomes.

An examination of the percentage expended for food, housing, and other purposes suggests that the proportion of income devoted to each of them may not always move in the same direction as we pass from one income-group to the next higher. The $400 families in the Labor Report of 1903 spend a higher percentage for food than the $300 families. If the comparison is carried far enough upward in the scale of incomes, a point is reached in New York where rent ceases to fall off in percentage expenditure, and clothing ceases to demand a larger proportion than in the group preceding. The fact seems to be that each of the three primary wants takes its turn in urging its claims vociferously, and when these have been pacified, the desires for the things that make life worth living begin to be heard. In regard to each class of wants in turn a point of relative saturation is reached, and a more adequate satisfaction of the next one becomes possible.

Changing ratio for housing. In New York City the most imperative need on the lowest incomes is for housing. Some place of shelter must be provided, and, however wretched, it will not be cheap. Thirteen dollars a month was the average rent paid by seventy-two families whose average income was $650. But this amounts to $156 a year, or 24 per cent. of the

total income. When the cost of shelter demands a quarter of the whole income, food and clothing must take what is left. But the accommodations obtained as the minimum that can be lived in by the families with $650 a year are practically good enough for those with an income one and two hundred dollars greater. Seventy-three families whose income averaged $846, spent only fourteen dollars a week on the average for rent. But this was only 21 per cent. of their larger total expenditure. Meanwhile their food percentage was practically as high as that of the $650 group (44.3 per cent.), representing an increase in average amount expended from $290 to $360.

Changing ratio for food. In food the point of diminishing percentage was not reached until after the $1000 line was passed. The food-percentage increased, as with the families in the United States Labor Report of 1903, on passing from $400 to $500, and from $500 to $600. This may be due in part to exaggeration in the returns of expenditure for food. In part it was due to the fact that until an increase of $800 was reached one-third of the families were underfed. The proportion of the total food-expenditure that was given for animal food increased, and that expended for cereal food diminished. The cost of animal food comprised 29 per cent. of the total food bill of the families in the $600 income-group, and 32 per cent. of those in the $1000 group. Cereals dropped correspondingly from 21 to 17 per cent. The expenditure for alcoholic drinks increased, taking into account only those families that reported this item, from the average of $27.25, or 4.2 per cent. of the total expenditures in the $600 group, to $59.96, or 5.2 per cent., in the $1100 group.

Clothing; other wants. Clothing comes last of the three to a constant or a diminishing proportion of the expenditures. In the New York families under consideration the percentage expenditure rises slightly with each increase of $100 in income until the $1100 group is reached, and thereafter remains constant at about 15 per cent. The expenditures for other

purposes than these three primary necessities are kept under until these wants are met. By the time something like an equilibrium among these three has been reached, say at $800 for our New York families, the expenditure for recreation, social obligations, care of the health, and all other purposes save fuel and light, claims a larger proportion of the income. The proportion is 1 per cent. higher at $700 than at $600, but at $800 it rises from 14 to 16 per cent. of the total expenditure, and continues to increase without sign of stopping. That is, the culture-wants are beginning to claim their own, which, under the necessity of keeping the wolf from the door, they could not be permitted to have.

A striking example of this tendency of subsistence-wants to claim the lion's share of all increasing income is found in Engel's comparison of the Belgian returns of 1853 with those of a similar investigation made in 1891. At the latter period, although the average income had nearly doubled, the expenditure for food comprised 65.7 per cent. of the total in 1891 as compared with 64.9 per cent. in 1853. In fact, food, clothing, rent, and fuel and light consumed 96 per cent. of the income in 1891 and only 94 per cent. in 1853.

Minimum standards of consumption. The same general conclusion as to the relative insistence of the several classes of wants may be drawn from another method of handling the New York returns. A minimum standard, as exact as could be determined, was applied to the expenditures for food, clothing, and housing, and the number of families counted in each income group who came short of the standard. For food, the minimum was set at an expenditure at the rate of 22 cents per man per day, as calculated after the manner made familiar by W. O. Atwater in the Bulletins of the Department of Agriculture. This figure was reached, after an analysis of one hundred of the family reports, by Dr. Frank P. Underhill, of Yale University, a competent expert. Professor Atwater's estimate on the basis of data gathered in

New York City a few years previous, when a lower scale of prices prevailed, was from 23 to 25 cents. For housing the minimum was fixed at one and one-half persons per room, that is, not more than six persons to four rooms. For clothing the minimum was set at an allowance of $100 for the assumed family of five persons, expenditures for washing being included in this sum.

For our present purpose the accuracy of these estimates of a minimum requirement for physical efficiency does not concern us, but only the variations in the departures from them that appear in the several income-groups. Measured by these standards, of the families with incomes between $400 and $500 all are underfed, 88 per cent. are underclad, 63 per cent. are overcrowded. That is, the want of shelter is being satisfied at the expense of food and clothing. In the next income-group ($500–$600), the underfed are 65 per cent., the underclothed, as before, 88 per cent., the overcrowded 71 per cent. In paying more attention to the need of food, less attention is paid to shelter. A higher rental is paid, but more persons are crowded into the accommodations offered. In the next income-group ($600–$700) the underfed have fallen to 33 per cent., the underclad to 63 per cent., the overcrowded to 57 per cent. For every income-group thereafter, the overcrowded families preponderate over both the other classes. Even in the $1100 income-group 21 per cent. are overcrowded, but none underfed, and only 6 per cent. underclad. These figures, taken as a whole, imply that the most urgent need at the minimum income is for shelter, outclamoring not hunger perhaps, but at least the want of adequate food. With a larger income a pause can be set to the desire for better housing, while more attention is given to the providing of food. With an income still larger, of $900 and above, the deficiencies in diet are supplied, and at $1000 the minimum allowance for clothing has been attained by practically all the families. Not even at this point, however, does the desire for

adequate housing, at the price which must be paid for it, suffice to persuade more than three-fourths of the families to go without enough of other things to secure it.

Saving. Another alternative to expansion of expenditures, for whatever purpose, as income increases, is saving. Saving becomes easier as income increases. But the point where savings begin is not necessarily the point where a standard even of physical efficiency is attained. There are families that save at the expense not only of comfort, but even of health, and there are families that no increase of income would induce to save. Of the underfed families just alluded to, one-half reported a surplus of income over expenditure of at least $25; 65 per cent. of the families reckoned as underclothed, and 44 per cent. of the overcrowded likewise reported such a surplus. When this is compared with the percentage of all families that reported a surplus, namely 36.5, it seems fair to infer that the desire to save represses expenditures to meet actual physical necessities.

On the other hand, by no means all families on a larger income preferred saving to spending. Not until $1300 is reached is there a constant increase in the number of families that report a surplus of income over expenditures. This indicates that there are Micawbers on large incomes as there are misers on small incomes, but also that the social influences of New York City, at least, encourage adding to the good things included in standards of living quite as much as they encourage saving. The proportion of savers among the Russian and Italian families was found to be much higher than among families of more thoroughly Americanized stock.

Conclusions. On the whole the conclusions drawn from the New York investigation substantiate the restatement of Engel's "laws" given by Stephen Bauer in his article "Konsumtionsbudget" in Conrad's Handwörterbuch, as follows:

With increase of income:

1. The proportion spent for food, especially for vegetable food, falls.

2. The proportion saved constantly increases.

3. The proportion spent for housing, fuel, light, falls until a certain income is reached, then remains constant or increases.

4. The proportion spent for animal food, drink, clothing, culture, and recreation rises until a certain income is reached, then remains constant or falls.

ECONOMIC CAUSES AS AFFECTING THE POLITICAL HISTORY OF THE UNITED STATES

[An address with this title was given by W. M. Daniels, then professor of political economy in Princeton University, before the Scottish Society of Economists in 1906, and printed in *The Accountants' Magazine*, for May, 1907. It is here somewhat abbreviated and edited, with the approval of the author.]

Before 1820 the custom had grown up for British travelers to the United States to make a book out of their transatlantic impressions. Despite their curiously varied verdicts, there was one aspect of contemporary life upon which they were in singular accord. This was the all-important influence exerted by an almost boundless unoccupied domain beyond the line of actual settlement. The vivacious Miss Martineau, in her "Travels in America," published in 1837, has recorded that "the possession of land is the aim of all action, generally speaking, and the cure for all social ills among men in the United States. If a man is disappointed in politics or love, he goes and buys land. If he disgraces himself, he betakes himself to a lot in the West. If the demand for any article slackens, the operatives drop into the unsettled lands. If a citizen's neighbors rise above him in the towns, he betakes himself where he can be monarch of all he surveys. An artisan works that he may die on land of his own. He is frugal that he may enable his son to be a landowner."

Miss Martineau and her colleagues were quite correct in their insistence upon the dominant rôle that an imperial abundance of unoccupied territory was to play. The first period of our national development, economic and political, corresponded roughly with the duration of a free public

domain, which challenged the pioneer and settler to the further conquest of physical nature. The second period began about 1880 with the exhaustion of our free lands and the vanishing of the frontier. The first era was one of expansion and settlement; the second, in which we still live, is one of readjustment and recoil.

In treating of the economic causes which have affected the political history of the United States, I shall speak first of the manner in which free land reacted upon our constitutional system; second, of the clash of slavery and free labor; and lastly, of the power of concentrated financial control.

I. **Free land and democracy.** The process of westward expansion and settlement has too often been described in its external aspect, in the baldness of its objective statistical detail. But without some apprehension of the economic society which that expansion into new lands called for a time into being, the most thorough-going political transformation in our history cannot be grasped.

The notion may be dismissed at the outset that the winning of the Western wilderness was largely an automatic process, due merely to the growth and spread of population into vacant, contiguous territory. The instinct for successful migration and colonization is a rare endowment, found only among a few peoples, and exercised by them only intermittently.

"The tide of Anglo-Saxon settlement was for two centuries held in by mountains near the Atlantic shore-line, and then swept to the base of the Rocky Mountains in much less than half that period." Not until the tenuous girdle of French trading-posts along the great lakes and the Mississippi was snapped, did the pent-up spirit of colonization find a second outlet.

How very imperfectly this westward trend of settlement was then grasped, even in the United States, may be gathered from the locating in 1790 of Washington, the national capital, at what is practically the middle of the Atlantic sea-

board. Supposed originally to be centrally situated for all time to come, it is to-day hundreds of miles from the center of population, and three thousand miles from the States on the Northern Pacific. Since 1800 the center of population has moved regularly with each decade towards the west, in some decennial periods as much as eighty miles, and rather curiously has always closely hugged the 39th parallel of north latitude. The lure of free land has been the steady magnet, while industrial depression in the East has by a process of repulsion occasionally reinforced the steady pull westward.

The founders of the new Western States were from the native Eastern stock, but sifted out of it by a self-chosen career of adventure in confronting and vanquishing primeval nature.

The pioneer class could not be recruited from an exploited fringe of an early proletariat, or from raw immigrants. De Tocqueville had noticed in 1835 that immigrants to America did not push west, and had explained that "the desert cannot be explored without capital or credit, and the body must be accustomed to the rigors of a new climate before it can be exposed to the chances of forest life." In later decades free transportation has often been furnished to induce the immigrant to locate at a distance from his port of entry. But the pioneer was seldom an immigrant, and the early settler was seldom a peasant. "Everything about him," testifies De Tocqueville, "is primitive and unformed, but he is himself the result of the labor and the experience of eighteen centuries. He wears the dress and speaks the language of cities, and penetrates into the wilds of the New World with the Bible, an ax, and a file of newspapers."

I have dwelt upon the origin and character of the early Western settlers because it was the central West that was destined to transform the political habit of the United States. That influence, however, we shall seek in vain in the shifting ebb and flow of early political conflicts. The fairly whimsical way in which not only the West but the other sections,

New England and the South, shifted their political preferences until slavery had become the one imperious issue reminds one of Talleyrand's cynical remark, that a man who aims to be true to his party must be ready for frequent change of his principles.

But while no decipherable progress can be conjured out of alternating party triumphs in the central West, the unprecedented economic opportunities long enjoyed by all the inhabitants of the new commonwealths in approximate equality were destined to transform the whole political fabric. The abundance and fertility of the soil yielded to the unflagging energy of the new settlers a crude but very bountiful subsistence. The hired laborer was able to wrest from his employer a wage commensurate with that which the worker could command for himself by resorting to fertile and unappropriated land. The standard of wages and of comfort was high, and divergences in incomes and even in possessions were small and unimportant. From this fundamental economic equality there resulted in these frontier communities, unused to social distinctions, and untrained in the notion of class subordination, a fierce equalitarian spirit which found its earliest expression in their local politics. "Every age," says Burke, "has its own manners and its politics dependent upon them." The manners and customs of the early West were the product of approximately equal earnings and possessions. These first found expression politically, in the newer States, in manhood suffrage (negroes alone excepted), and in the practice of making almost all official positions elective, with a short, fixed term of service. By contagion these forces were destined to invade the older States, and eventually to prevail throughout the Union. It was through these innovations that a serious dislocation of the older constitutional system was to be effected. . . .

In all of the older States the suffrage was hedged about by limitations—ecclesiastical, residential, and pecuniary. . . . Eligibility to office was still more narrowly guarded. The

property qualifications restricted office-bearing practically to the local notables or gentry. . . .

This entire régime of a restricted suffrage, of class control, of appointive offices obtainable only through interest, and of permanent incumbency of such positions, was alien to the spirit of the new West. Economic equality to the new States had been translated into radical political equality. To the industrial opportunities which that section afforded were now added the proffer of wider political rights and opportunities than were enjoyed in the East. Partly by a process of political infection, many of the older States began to reshape their franchise on more liberal lines. The center of political gravity was thus being continually shifted within the older States; and by 1824 the new electorate had become conscious of its power in the arena of national politics. The Congressional Caucus which had named the succession to the presidency for half a century fell into abeyance as the new device of nominating conventions was launched. These nominating conventions were composed of delegates from the various localities, chosen by popular voice. They now named candidates for the presidency as they had previously done for other State and local offices. No sooner had the nominating convention system been established than virtue departed from the Electoral College. Thenceforth its members ceased to exercise any deliberative or independent volition, and simply registered the presidential choice of the party which had elected them. Thus the election of the president was finally made dependent upon the popular vote; and with a representative hero in the person of Jackson, the new democracy in 1828 forced the doors of the old régime, and "the political control of the gentry, which the Constitution framers had counted on as perpetual," passed forever away. The character of the presidential office became radically changed. From being an embodiment of executive prerogative, independent of popular choice, it became an elective kingship; and where the incumbent is himself a forceful character, like Jackson, or

Lincoln, he wields the immense powers of tribunative authority.

It cannot in fairness be denied that this transformation of our constitutional system had likewise a very seamy side. The spoils system which had already infected local politics was now introduced into national politics, and wholesale proscriptions of office-holders became the rule when the opposition party came into power. The envious traits of democracy were so played upon, that the possession of even moderate wealth became a positive obstacle to a political career. Moreover, in its haste to take the government out of private hands, and to subjugate the old hereditary bureaucracy, the new democracy had created a vast multitude of elective offices with short official terms; and some enginery was necessary to organize the frequent nominating conventions, and to manage the complicated business of frequent elections. As a result, a new set of party managers, a sort of outside unofficial magistracy,—the so-called Machine, a body unknown to the law, and subsisting originally on the spoils of offices,—became a permanent fixture. Thus the original economic equality in the new West had transformed the older constitutional system of class rule into one based practically on universal suffrage. It had made the political organization or Machine national in its extent of power. It had made the president a popular tribune; but it had dislodged an enormous mass of social débris,—a result which is often the price that must, temporarily at least, be paid even for a peaceful revolution.

II. **Slavery and free labor.** In the original Southern States, and in the new States to the south of the Ohio River, economic life and development had been profoundly modified by negro slavery. In earlier colonial times slavery had prevailed in all the colonies; but the negro cannot thrive in the rigorous climate of the farther North, and has always been numerically a negligible element in its population. For intensive farming, as for mechanical labor, requiring skill, the negro had been found to be a costly laborer. These causes,

reinforced by humanitarian views, led to the early and easy abolition of slavery in the North. In the South, conditions, both climatic and economic, were different. The black could and did increase and multiply in that region. The cultivation of tobacco on the seaboard by negro labor was at the outset immensely profitable, the negro's lack of skill being offset by the unparalleled richness of the soil and by the wasteful system of soil-exhaustion. But as this process of earth-butchery about reached its limit, it seemed for a time likely that economic causes would coöperate with the humanitarian sentiment, originally very prevalent amongst the Southern gentry, against the slave system. At the same time, the numerous negro population of the South rendered extrication from the *impasse* difficult in the extreme. Removed often by only a generation from primitive African savagery, they were clearly untrained for self-rule or for immediate political equality with the whites. Slavery with all its drawbacks was essentially a system of government, and an effective alternative which would have afforded security to the whites and subsistence to the negro seemed practically unattainable. It appeared for a time not impossible that the moribund system might develop into the mild patriarchal rule of a primitive agricultural state. But the invention of the cotton-gin in 1793 gave slavery a new and undreamed-of lease of life. Hitherto only cotton of the long staple had been grown, and that only in the tide-water sections. The cotton-gin made profitable the cultivation of the short-staple variety, and opened the vast unoccupied upland of the South to cotton culture. The planter with his gang of slaves penetrated the Southern wilderness, moving in parallels to the white pioneer and settler on the North and West. The early economic complexion of the South was thus irretrievably fixed by slavery. Free labor would not betake itself to a section where slavery had stamped an odium on manual toil, and the subsequent stream of European immigration left the South untouched. The two westward currents finally converged in the border

States of the West, and first in Kansas the free settlers and the slave-owners contended for the territory in question. The contest grew until it involved the nation in civil war; and eventually the arbitrament of war swept slavery away altogether. The ultimate economic result of the war upon the South, impoverished and exhausted by the struggle, was regenerative. The deeps of its industrial stagnation were stirred, and its isolated homogeneity was destroyed. Manufactures and commerce have invaded its territory and diversified its occupations, so that eventually its economic structure will conform closely to that of the other sections of the nation.

It is true that the legacy of slavery still persists in the South in the shape of sharp race antagonism. What the outcome of that situation will be no one can say. Racial amalgamation is so improbable, and, if possible, so incredibly distant, that the hypothesis may be dismissed as beyond the scope of present inquiry. Political equality was conferred on the negro by amendments to the Federal Constitution, but its denial in practice only indicates that, as a solution of the race question, it was an untimely step. There is unfortunately not very much to be anticipated from the speedy growth of the black in wealth; for while a few negroes have prospered individually, the race as a whole has hardly shown aptitude sufficient to warrant belief in its power as a permanent competitor with the white in many occupations. Even in cotton-planting, the recent Italian immigrant is, in some sections, ousting the negro tenant-farmer from the land. The most that a sane optimism can reasonably hope is, that a remnant may be trained so as to hold their own as small cultivators, artisans, and servants, and that white immigration to the South may very appreciably lessen the relative proportion of the blacks to the entire population. Recent censuses give some considerable color to this latter contingency. If the negro individually shows remarkable talent, recognition of his achievement is bound to follow, and it would be wrong as well as impossible in the long-run to withhold it. But the deep-seated ra-

cial antipathy that so often leads a white mob of the South, incensed at negro brutality, to acts of inhumanity that make civilization a mockery, is only an index of the cancerous nature of the race problem in our Southern States.

III. **Capitalistic consolidation and class antagonism.** At the close of the Civil War, in 1865, the remaining free public lands of the West greatly facilitated the disbanding of the Northern army. But a decade later, by the time that the Southern States were again represented in Congress, and the war's results had been embodied in constitutional amendments, the available land of the West was practically exhausted, and the frontier of settlement had disappeared. New public issues of a progressively economic character emerged, and were to be canvassed often with rancor, now that free lands served no longer as an absorbent of social discontent.

It was the beginning of a period of recoil and readjustment. Population was losing some of its fluidity, and friction was developing. The center of population was no longer shifted rapidly towards the Pacific, moving tardily in the last census decade (1890–1900) only fourteen miles to the westward. Tendencies that heralded the approaching industrial maturity of the country multiplied. The urban population gained steadily on that of the rural districts, and by 1900 towns of 8000 or over contained fully one-third of all the inhabitants. The first manifestation of unrest centered about financial and monetary heresies, such as the agitation for the permanent inflation of the currency; and the agrarian communities of the newer sections rallied to the support of this and kindred proposals. The so-called Granger or anti-railroad legislation, prevalent in the same section, was an index of a newly awakened hostility to the rapidly growing transportation interest. By 1880 the phenomenon of industrial consolidation began to attract attention. In cotton, woolen, and iron manufactures, the number of plants either diminished absolutely from decade to decade, or showed an inconsiderable

increase by no means proportionate to the growth of population. Concurrently with this check in the increase of the number of establishments, the average capital investment, the annual output per plant, and the average number of employees per factory, grew prodigiously. The dearth of profits which vigorous competition had brought about had given rise to attempts at consolidation in certain industries; and the virtual monopoly of refining sugar and petroleum, originally under the trust form of organization, was evident as early as 1880. Both the organization of industry upon a grand scale, and the ampler means at the disposal of master manufacturers, quickened the pace and multiplied the economies of production.

On the other hand, labor associations after the Civil War grew in number, and took on a radically different character. Instead of transitory quasi-social guilds of local craftsmen, they became permanent unions, militant in aim, and confederated with hundreds of similar organizations pursuing a common purpose. Beginning first in 1877, strikes of such magnitude and violence occurred as to simulate territorial insurrections and to require the intervention of the Federal army.

The legislative mill began to grind out statutes of a significant and far-reaching economic purport. In Congress the Chinese Exclusion Act came in 1882. The law prohibiting the importation of laborers under contract for hire followed in 1885. Federal regulation of railroads by the Interstate Commerce Commission began in 1887, and the Sherman Anti-Trust Act followed in 1890. Even after the tardy resumption of specie payments in 1879, the forces of discontent, especially among the agrarian communities of the West, battled persistently until 1896 for inflation, under the guise of free silver coinage. . . .

The growth of colossal private fortunes began to excite formidable unrest. . . . [Omitted here is the discussion of the then current political issues and policies].

I have tried to indicate, first, how the prevalence of natural economic opportunities created for a time in the belt-line of our expanding national power a fiercely equalitarian society, and how this society wrested political control from an older hereditary aristocracy and deposited it in the hands of the masses. The cost of this progress was registered in a fluctuating civil service, and in a permanent and costly political organization which has too often succumbed to corrupting influences. Second, I have sought to show how slavery stamped indelibly its economic character upon the South, until the clash of the two opposed industrial systems in the border States of the West precipitated civil war and led to the eventual abolition of slavery. This undoubted gain was purchased only at the cost of the acute race-antagonism which still agitates the South. Lastly, I have tried to outline the results of the more systematic exploitation of wealth in a territory whose frontier has disappeared,—a process which has largely proceeded from the concentration of capitalistic control, which has issued in unprecedented opulence, diffused in some measure throughout the greater part of the population, and yet attended by the unfortunate growth of class-antagonisms and by pervasive distrust of our party organizations. Each movement has shown a temporary social loss, and no less surely there has emerged in each a correlative social gain.

GOLD PRODUCTION, 1890–1910

[The Director of the Mint in his annual report for the year 1911, discusses the recent increase in the output of gold, the manner and extent of its absorption into monetary and industrial uses, and some of the probable changes in the future. Omitting many details of the evidence, we give here the most essential parts of the discussion. (Annual Report of the Secretary of the Treasury on the State of the Finances, June 30, 1911, p. 266.)]

The world's absorption of gold and the rise of prices. The enormous increase in the production of gold which has occurred in recent years, and the relationship that may exist between these enlarged supplies and the advancing prices of commodities, has awakened a world-wide interest among economists. It has seemed for this reason worth while to undertake the task of tracing the yield of the last two decades into actual use for the purpose of discovering where it has been located and how much of it has been placed where it would probably exert an influence for the expansion of credit, the stimulation of industry, and the rise of prices.

The new golden era may be said to have had its beginning with the discovery of the Transvaal deposits in South Africa and the development of the cyanide process, which was first used successfully in the treatment of the Transvaal ores, but has since contributed in an important degree to the increased production of nearly all gold-mining districts. . . .

The production of the world for [three of] the ten years from 1890 to 1899, inclusive, and for [three of] the eleven years from 1900 to 1910, inclusive, is given in separate tables and the yield of the three principal producing countries is also shown separately. The African product is mainly from the

Transvaal but includes Rhodesia and lesser fields which altogether had in 1910 a production of $19,592,679. [Tables abbreviated].

GOLD PRODUCTION—FIRST PERIOD—10 YEARS, 1890–1899, IN MILLION DOLLARS.

Years.	Africa.	United States.	Australia.	Others.	Total.
1890	9.8	32.8	29.8	40.6	113.1
1895	44.7	46.6	44.7	62.6	198.7
1899	73.0	71.0	79.3	83.3	306.7
Total 10 years.....	420.0	467.0	458.2	614.5	1959.9
Average	42.0	46.7	45.8	61.4	195.9

GOLD PRODUCTION—SECOND PERIOD—11 YEARS, 1900–1910, IN MILLION DOLLARS.

Years.	Africa.	United States.	Australia.	Others.	Total.
1900	8.6 [1]	79.1	73.4	94.2	255.6
1905	113.2	88.1	85.9	92.9	380.2
1910	175.1	96.2	65.4	117.7	454.7
Total 11 years.....	1123.9	955.3	862.7	1095.5	4037.6
Average	102.1	86.8	78.4	99.5	367.0

By way of accounting for the distribution and employment of this product, . . . [several tables are given below].

Gold used in the arts. It is confessedly a difficult task to make a satisfactory estimate of the amount of gold consumed in the arts and industries, for the reason that only a few countries have made it the subject of official inquiry. Evidently, however, it is necessary in any consideration of the influence of the new supplies of gold upon prices to make some allowance for the portion of these supplies or of the existing monetary stock that has been diverted to industrial uses. . . .

[Page 272] The following is the bureau's estimate in detail for the consumption in the arts and waste of gold for the calendar year 1910, excluding Asia and Africa:

[1 Note effect of the Boer War.]

WORLD'S INDUSTRIAL CONSUMPTION, 1910.

Countries.	Gold (value).
United States	$ 33,756,500
Germany	15,536,000
France	16,836,000
Great Britain	18,000,000
All other countries	27,720,000
Total	111,848,500

Some writers of repute in the past have made large estimates for the abrasion which coins suffer under use. This was doubtless a larger factor in former times than it is now, the principal use of coin in modern monetary systems being to serve in reserves against paper money in circulation. . . .

Exports to Asia. There are practically no figures for the absorption of Western or Central Asia. The statistics for China are of little value, but on the whole there is a movement outward, showing that the production, possibly augmented by unrecorded imports, exceeds the recorded imports.

In statistics of the precious metals India is the most important country of Asia, and has long been one of the most important in the world. The Government of India has advised this bureau that the uncoined gold imported into that country might be considered to be used for ornaments and in manufactures. This amounted in 1910 to $47,026,698.

The movement to India deserves to be treated in a class by itself. A large part of the gold and silver that goes there sinks out of sight, and whether it is made into ornaments or buried in the ground, is withdrawn at least in large part from the monetary stock of the world. Some of it may be brought out in periods of emergency, such as times of famine, and reconverted into money, but in the past a steady stream of the precious metals has moved into India and disappeared as a factor in the commercial world. Sir James Wilson, K.C.S.I., for many years in the Government service in India, in a comprehensive address delivered before the East India Association of London, on June 14, 1911, reported the net

imports of gold by India since 1840 at about $1,200,000,000, or one-tenth of the world's production in that time. . . .

Sir James Wilson, in the address alluded to, sums up his explanation by saying:

> As for India, her prosperity is steadily advancing. Great numbers of her people prefer to spend their savings on gold rather than on other commodities. The probability is that altogether apart from questions of currency, India will continue to absorb gold in ever-increasing quantity. . . .

Egyptian absorption [page 275]. The Egyptian situation is somewhat like that of India. The country is on a gold basis, and for thirty years has been steadily taking gold in the settlement of its trade balances. The high price of cotton in recent years and the increasing production of the country explains the trade balances, but there is some mystery about the way the gold disappears from view. It does not enter into bank stocks, and it is difficult to understand how a country of its size and population and in which the masses of the people are so poor can absorb so much gold coin. In the first period under review the customs records show net imports of $58,670,000 and in the second period $146,660,000. For the year 1910 they were $30,000,000.

Some light is shed upon the situation by the following statement in an address by Lord Cromer, made in London in 1907:

> A little while ago I heard of an Egyptian gentleman who died leaving a fortune of £80,000, the whole of which was in gold coin in his cellars. Then, again, I heard of a substantial yeoman who bought a property for £25,000. Half an hour after the contract was signed he appeared with a train of donkeys bearing on their backs the money, which had been buried in his garden. I hear that on occasion of a fire in a provincial town no less than £5,000 was found hidden in earthen pots. I could multiply instances of this sort. There can be no doubt that the practice of hoarding is carried on to an excessive degree. (*The Statist,* Nov. 2.) . . .

The movement to South America [page 276]. During the first period there was little change in the gold stocks of South

America, but in the second period there was an important movement to several countries. Two in particular, viz., Argentina and Brazil, drew heavily for the accumulation of reserves as a basis for their paper currencies. This policy in Argentina is being carried out under the law of November 4, 1909, and in Brazil under an act that went into effect December 2, 1906. The total stock of gold in Argentina at the close of the calendar years 1889 and 1899 was estimated in official returns to this bureau at $13,000,000 and $25,000,000, respectively; the stock in the conversion fund and in the Bank of the Nation on the 31st of December, 1910, was $244,400,000.

No estimates are available for the amount of gold in monetary use in Brazil in the years 1889 or 1899, but it was probably not in excess of $10,000,000 at either time. On December 31, 1910, the stock in the conversion fund was $98,500,000.

According to the customs records of Great Britain and the United States, Uruguay has imported large amounts of gold. Their records indicate an excess of exports to Uruguay over imports from that country of $128,000,000. There are no published figures for Uruguay either of customs records or bank reserves. The country is on a gold basis, but its population, banking business, and trade are all too small for such an absorption of gold. Probably most of these imports ultimately reached Argentina.

There have been small gains in other South American countries and it is probably fair to estimate that altogether South America during the second period has increased its gold holdings by the amounts now in the conversion funds of Argentina and Brazil, or, in round figures, $343,000,000. . . .

Summary of foregoing [page 277]. During the first period Asia and South America took comparatively little gold. Where they had any metallic standard or currency, it was silver, and for many countries the currency was inconvertible and depreciated paper.

Reviewing the second period, in which the production of

gold amounted to approximately $4,037,000,000, the following amounts appear to have been diverted from monetary use, or so employed that apparently they would not be directly effective upon world prices:

Industrial consumption	$ 958,000,000
India	433,000,000
Egypt	146,000,000
Japan	69,000,000
South America	343,000,000
Mexico	28,500,000
Total	1,977,500,000

The total represents nearly one-half of the production of the period. The demand outside of the old circle of gold-using nations is a growing one, greater in the last half of the period than in the first, still increasing in the countries named and spreading to other countries that in the past have not been accustomed to use gold as money. . . .

GOLD STOCKS IN SIGHT IN EUROPE, THE UNITED STATES, CANADA, AUSTRALASIA, AND SOUTH AFRICAN COLONIES. [TABLE COMPREST]

IN MILLION DOLLARS.

Banks and treasuries.	Dec. 31 1889	Dec. 31 1899	Dec. 31 1910	Increase 1899 over 1889	Increase 1910 over 1889
Total United States..	423	683	1,410	259	726
Total Europe.....	914	1,601	2,464	686	863
Total Australia, Canada, S. Africa.....	102	161	343	59	181
Grand total...	1,440	2,447	4,218	1,006	1,771

CIRCULATING NOTES AND LOANS AND DISCOUNTS.

Institutions.	Notes in circulation			Loans and discounts		
	Dec. 31 1889	Dec. 31 1899	Dec. 31 1910	Dec. 31 1889	Dec. 31 1899	Dec. 31 1910
Total Europe.....	2,818	2,973	4,324	3,031	4,184	5,146
Total United States.....	126	199	684	3,842	5,167	12,855
Total Australia, Canada, S. Africa and Japan.....	145	197	398	909	1,351	2,591
Grand total	3,089	3,369	5,407	7,782	10,704	20,593

Relative value of factors in the calculation. In considering the figures for production, consumption, and distribution, those for the holdings of banks and treasuries are, of course, of first importance, there being no element of uncertainty in them. Next to them in order of credibility are the figures for production, which for all the more important mining districts are reported by responsible authorities. The figures for consumption in the arts must be allowed a larger margin for error, and have been fully explained. The official statements of the exports and imports of different countries, which might be supposed to be from trustworthy records, in fact must be used with great caution, as they are frequently contradictory, or inconsistent with more credible evidence. . . . It is generally understood that exports are given a less strict surveillance than imports, and that movements by sea are more accurately recorded than those between adjacent countries by rail.

The first period, 1890–1899. The production of the first period was estimated in round numbers at $1,960,000,000, which from the best data available seems to have been distributed about as follows:

Industrial arts	$ 570,000,000
Banks and treasury of United States	260,000,000
European banks	686,800,000
Banks of Canada, Australasia, and South Africa	59,700,000
Total	1,576,500,000
Other banks, circulation, private holdings, etc...	383,500,000
Total	1,960,000,000

. . . The production of gold during this decade was approximately $900,000,000 greater than in the preceding one, and the increase was largely taken for the reorganization of monetary systems and for strengthening bank reserves. The gold reserves of European banks increased 75 per cent., while the paper issues increased less than 5 per cent. The world over it was a decade in which enterprise was at a low ebb, although the years 1890–1892 were very prosperous in the United

States, and there was a general revival in the last two years of the period. Prices reached the lowest 10-years level for which records are existent.

Second period, 1900–1910. According to the figures given the distribution of new gold during the second period was apparently about as follows:

Industrial consumption	$ 958,000,000
India	433,000,000
Egypt	146,000,000
Bank of Japan	69,000,000
Banks and conversion funds of South America	343,000,000
Banks of Mexico	28,500,000
Banks and treasury of the United States	726,800,000
Banks and treasury of Canada	85,700,000
Banks, Australasia and South Africa	95,600,000
Banks of issue of Europe	863,200,000
Total	3,748,800,000
Other banks, circulation, private holdings, etc.	288,200,000
Grand total	4,037,000,000

Again, the amount unaccounted for, and which is considered to have been gained by other banks or to have entered into circulation and private hoards, may seem small for the volume of production. In the United States a calculation based upon coinage and the exports and imports of domestic coin, indicates a net gain of gold coin in circulation of $71,000,000. It is to be considered that there is an undoubted tendency in all countries to use banks more than formerly, and it is probable that the stock of gold in banks has been recruited not only from new production but to some extent from gold heretofore held in private hoards and out of use. In every country the younger generation to whom these hoards descend is likely to put them to some use.

The table shows that banks of issue in Europe in the second period increased their gold stocks by about 50 per cent. and their note issues about the same. Their advances or loans and discounts increased about 25 per cent., or by a lower percentage than during the previous period.

An examination of the individual gains of these institu-

tions will show that a large amount of the new gold taken by Europe has been devoted to the same purpose as in the preceding period, to wit, the rehabilitation of monetary systems and to strengthen and buttress the institutions of issue. . . .

The outlook for gold production [page 286]. It has been a theory of writers on the subject that the rise of commodities and wages would automatically check the production of gold, thus providing its own corrective, but the gold-mining industry furnishes an illustration of how invention, organization, and the use of capital are able to accomplish a reduction in costs when every factor in the calculation shows an advancing tendency. The cost of handling ore and extracting gold in the Transvaal mines per ton of ore treated has steadily declined and made a new low record in 1910.

The cost of mining gold, however, unless revolutionary changes are accomplished, does not have as great an influence upon production as in the case of common commodities for which there is an unlimited supply of raw materials. It is a fact already alluded to in this paper, and familiar to all who have followed developments in the gold-mining industry, that the great increase in the output since 1890 has been due in the main to two contributing discoveries that were directly related to each other, to wit, the discovery of the Transvaal field and the discovery of the cyanide process. Of course, it is possible at any time for both of these discoveries to be repeated in others as important, but until such new discoveries are made there will be no similar leap in production. Since 1906 the rate of production in the United States, including Alaska, has been practically at a standstill. There is nothing to indicate a considerable change in either direction. Australasia has been on a declining scale since 1903, the annual yield being now about $28,000,000 below the high year. Russia, Canada, and Mexico have shown an increase of late about sufficient to offset Australasia. The Transvaal has been pushed up to a new record in 1911, but the deposit is

well defined, and the increased production of recent years has been due to an enlargement of the crushing plants rather than to any extension of the field. This policy of increasing the investments in order to exhaust the mines more rapidly has probably gone nearly as far as it can be profitably followed. . . .

While it is not likely that the Rand will show an appreciable decrease for a good many years to come, it is probably not far from the maximum output. There has been no gain in the world's production for some years except that made by the Rand.

The figures given in the foregoing tables show how the hitherto undeveloped countries, outside of the old circle of industrial nations, are reaching out for a share of the new supplies. As a river rises in flood the water creeps over its banks, backs up its tributaries, fills up adjacent low places, and spreads out over expansive areas of lowlands, with the result that vastly more water is required to raise the level at the high-water stage than when the river is low. A somewhat similar distribution of new gold is going on and in prospect.

The historical parallel [page 288]. Gold was discovered in California in 1848 and in Australia in 1851, and by 1852 these new fields were producing together over $100,000,000 per year. The first noticeable effect was an accumulation of gold in the Bank of England, which reduced its discount rate to encourage borrowing. The first industrial effect was in the shipping and shipbuilding industry, due to the demands of an increasing trade with the United States and Australia, but the revival soon extended to the building trades and thence to all branches of industry, and spread over Europe.

By this time apprehensions were expressed as to the disturbing effects upon monetary systems of the threatened inundation of gold. Holland and Belgium stopped coining it.

About this time counteracting influences began to operate, and in view of the present movement of gold to India it is an

interesting fact that the most important modifying influence at that time was the movement of specie to India. . . .

Professor Stanley Jevons, a contemporary writer of high repute . . . writing in 1865 and reviewing prices since 1849, said:

> If we compare prices now (March, 1865) with what they were at their lowest in 1849, we find there has been a rise of 21 per cent. If we take the average of 1845–1850 as our standard of comparison, the rise is 11 per cent. The real permanent rise due to the gold discoveries is doubtless something between these, or probably nearer the higher limit, 21 per cent. The gold discoveries have caused this rise of price. They have also neutralized the fall of prices which might have been expected from the continuous progress of invention and production, but of which the amount is necessarily unknown.

THE NATIONAL BANKS

[THE Comptroller of the Currency, an officer of the Treasury Department of the U. S., gives in his annual report much information not only about the national banks, but about State, private, and savings banks in this country and in foreign countries. The following are a few extracts from the report of 1910.]

Organization of national banks. Under section 5133 of the Revised Statutes the organization of national banking associations by any number of persons, not less than five, is authorized. This section provides that the incorporators shall enter into articles of association specifying in general terms the object for which the association is formed and a copy thereof forwarded to the Comptroller to be filed and preserved in his office. The following section provides for the execution of an organization certificate by those who have entered into articles of association. This certificate is required to be acknowledged before a judge of some court of record or a notary public and transmitted to the Comptroller. When these documents have been filed with the Comptroller the association becomes a body corporate, but with powers limited to transaction of business incidental to organization until the issuance of the Comptroller's certificate authorizing the association to begin the business of banking. The law further requires the collection and certification of payment of at least 50 per cent. of the authorized capital stock and the deposit of a specified amount of United States registered interest-bearing bonds, and authorizes an examination for the purpose of determining the amount of money paid in on account of capital stock and whether all requirements of law in relation to organization have been met.

As the law, however, specifically confers upon the Comp-

troller discretion with respect to approval of the name selected for an association, the course of procedure under the established rules of the office is to require the submission of a formal application for authority to organize an association wherein is stated the title desired, location of the bank, capital stock, the signatures of the applicants given, accompanied by advice in regard to the business and financial standing of the applicants, number of shares to be subscribed for, and the previous banking experience, if any, of the applicants. Indorsements are required with respect to the character and standing of the applicants, the population of the place at which it is proposed to organize the bank, and an expression of opinion with respect to prospects of success of the association if chartered and conservatively managed.

Prior to the disposition of an application a copy thereof is sent to the national-bank examiner, to the member in Congress for the district in which the bank is located, and to the superintendent of the State banking department, with request for information with respect to the character and standing of the applicants, the existing demand for a bank at the locality, and an expression of opinion as to whether success is probable.

Applications for authority to convert State banks into national banking associations are made by the directors, and each case of this character is investigated for the purpose of determining whether the bank has been conducted in conformity with law, its measure of success, and also as to the character of its assets and general business.

In view of the fact that bank stock is generally regarded as a very desirable investment, the organization of banks, both national and State, has been very active during recent years, and it has been shown to be evident to both federal and state authorities that many banking institutions are organized, or organization attempted, without giving due consideration to their demand or their prospects of success. As far as possible the state authorities are now acting in har-

mony with the Comptroller in the upbuilding of banking conditions by preventing the organization of banks where the demand therefore is not apparent or where organization is attempted by those whose character and standing are questionable.

During the year ended October 31, 1910, 425 applications were received for authority to organize national banks, including applications to convert state banking institutions. Approval was granted in 315 cases and there were 74 rejections, the cause of the latter being, first, existence of ample banking facilities at the place; second, population and business too limited to warrant success; third, character of the applicants and of others interested. Rejections of applications to convert were based, primarily, upon information received to the effect that the management had been neither in conformity with law nor successful.

Charters were issued during the year to 311 associations having aggregate authorized capital stock of $30,760,000, and from the date of the passage of the national-banking act in 1863 to October 31, 1910, charters to the number of 9883 were granted. At the close of the current year 7218 banks were in active operation, 2176 having been placed in voluntary liquidation and 489 in the charge of receivers for liquidation of their business in the interest of depositors and other creditors. Included in the total number of charters granted were 1571 to institutions which were conversions of state banks. The capital of these converted banks at date of entrance into the national banking system was $330,665,928.

Under the provisions of the act of March 14, 1900, national banks to the number of 2953, with aggregate capital of $76,930,500, were organized, the average capital being approximately $26,000. Since the date of the act in question, 1666 banks were organized under the law of 1864, their aggregate capital being $214,912,800 and the individual capital $50,000 or more. It further appears that 652 of the banks chartered

in this period were conversions of state banks, their capital being $51,445,800; 1403 reorganizations of state or private banks, with aggregate capital of $93,987,000; and 2564 primary organizations, the capital represented being $146,410,500. The total number of banks organized from March 14, 1900, to the end of the current year was 4619 with aggregate capital of $291,843,300, exceeding by 1002 the number of banks in active operation on March 14, 1900. The average number of banks organized monthly from March 14, 1900, to October 31, 1907, was approximately 40; the average in 1908, 27; in 1909, 25; and in 1910, 26.

Reserves and deposits. The original law required the maintenance of a reserve on deposits in all respects but an exception was made with respect to United States deposits in the act of May 30, 1908. In determining the amount of deposits on which reserve is required to be held there is first ascertained the net balance due to other banks, to which are added dividends unpaid, individual deposits, and deposits of United States disbursing officers. From this gross amount the following deductions are allowed: Checks on other banks in the same place, exchanges for clearing house, bills of other national banks, and amount due from the Treasurer of the United States. The resultant amount of these deductions represents the sum of the deposits upon which is based the required reserve; that is, 25 per cent. for reserve city banks and 15 per cent. for all other banks. The amount of the reserve being determined, there is deducted therefrom the 5 per cent. redemption fund which the law authorizes to be counted as a part of the reserve. The 25 per cent. reserve required by central reserve city banks must consist of lawful money in bank; in other reserve city banks at least 12½ per cent. in bank, with a limit of 12½ per cent. with approved agents in central reserve city banks. Banks located elsewhere than in reserve cities are required to maintain a reserve of 15 per cent., of which at least two-fifths or 6 per cent., must

be in cash in bank and three-fifths, or 9 per cent., may be on deposit with correspondents in central or other reserve city banks.

While occasionally a bank is deficient in the amount of reserve required, the aggregate requirement for all banks is rarely deficient. . . .

The entire reserve required to be held by central reserve city banks is in lawful money with the exception of the redemption fund, which averages approximately one-fourth of 1 per cent. In other reserve city banks the lawful money reserve slightly exceeds 51 per cent., the amount available with reserve agents 47 per cent., and the redemption fund slightly less than 2 per cent. The reserve held in lawful money by country banks averages 45 per cent. of the total reserve held, the amount available with reserve agents averaging approximately 50 per cent., and the amount in redemption fund slightly in excess of 4 per cent. Taking the country as a whole, the lawful money in bank is approximately 64 per cent. of the total reserve held, amount available with reserve agents 34 per cent., and the redemption fund 2 per cent.

Profit on national-bank circulation. In computing the profit on the issuance of national-bank circulation it is assumed that the entire amount based on the bond deposit is in circulation and no deduction is made by reason of the fact that a reserve fund of 5 per cent. on the issues is required to be maintained in the office of the Treasurer of the United States for the redemption of notes as presented at the department, as the redemption fund is permitted by law to be counted as a part of the bank's lawful reserve. In the calculation appearing in the appendix to this report, the profit is stated, based on the average net price of bonds, monthly, during the year ended October 31, 1910, and is computed separately on deposits of 2 per cent. consols of 1930, the 4 per cent. loan of 1925, and the 2 per cent. Panama Canal Loan. Money is assumed to be worth 6 per cent. and the measure of

profit is the difference between the net receipts from the circulation loaned at 6 per cent. and interest that would be obtained on the cost of the bonds loaned at the same rate; in other words, from the interest received on the bonds at the rate provided therein, and the interest on circulation loaned at 6 per cent., are deducted the taxes on circulation, expense incident to the obtaining of circulation, i.e., plates, redemption charges, etc., together with the sinking fund and from the difference is deducted the interest on the cost of the bonds to show the profit.

During the year in question, 2 per cent. consols of 1930 ranged in price from a minimum of 100.505 on November, 1909, to a maximum of 101.24 in September, 1910, and on the same dates the profit on circulation in excess of 6 per cent. on the investment was 1.387 per cent. and 1.313 per cent., respectively; that is to say, on the issue of $100,000 of circulation on the security of 2 per cent. consols of 1930, at a cost of 100.505 the profit on circulation in excess of 6 per cent. on the investment was $1349.39, and on the bonds at a cost of 101.24 the profit was $1329.31.

The highest average net price of 4 per cent. bonds was 116.693 in November, 1909, and the rate on circulation secured by bonds of that class was 1.076 per cent. The lowest price on these bonds during the year was 114.875 during May, June, and July, the rate of profit being 1.225 per cent. in May, 1.220 per cent. in June, and 1.225 per cent. in July. The rate of profit, however, reached the maximum of 1.233 per cent. when the bonds in February were quoted at 114.932. The profit on circulation secured by the Panama Canal bonds is but nominally in excess of the profit on 2 per cent. consols, although in November, 1909, when the Panama Canal bonds were quoted at 100.130, the rate of profit on circulation was greater than on any other class of bonds at any time during the year, being stated at 1.426 per cent.

Earnings and dividends of national banks. While the dividend periods of national banks vary, and under the law

reports of earnings and dividends are required to be made to the Comptroller within ten days after the declaration of dividends, for statistical purposes the reports are abstracted for semiannual periods ending December 31 and June 30. In the appendix to this report appear the abstracts, by reserve cities and States, for the periods ended December 31, 1909, and June 30, 1910. Combining these two abstracts, for the purpose of showing results for the entire year, it appears that the average capital on which dividends were paid was $963,457,549. The average surplus was $630,159,719 and the gross earnings $402,655,823.44 against which were charged losses and premiums aggregating $38,714,082.62, or 9.6 per cent., and expenses of $209,784,251.35 or 52.18 per cent. With these deductions the net earnings are shown to have been $154,167,489.47, from which dividends were paid to the amount of $105,898,622, or 10.99 per cent. on the capital and 6.65 per cent. on the capital and surplus. The net earnings were equivalent to 9.67 per cent. of the capital and surplus.

The act requiring the submission of reports of earnings and dividends was not passed until 1869; hence the records begin with the year ended March 1, 1870, continuing to June 30, 1910, a period of forty-one years. The average annual net earnings of banks during this period are shown to have been $71,956,096 and the average dividends $54,198,299, or an average rate of 8.98 per cent. on the capital stock. The aggregate net earnings for the forty-one years are stated at $2,950,199,928 and the dividends at $2,222,130,367.

National-currency associations. In the annual report of the Comptroller of the Currency for 1908 the salient provisions were published of the act of May 30, 1908, providing for the formation of national-currency associations and the issue of additional national-bank currency.

Under this act national-currency associations may be formed by any number of national banks, not less than ten, with aggregate capital and surplus of at least $5,000,000, and located in contiguous territory. No national bank, however,

may be a member of a currency association unless it has an unimpaired capital and a surplus amounting to at least 20 per cent. of its capital. It is further provided that to be entitled to issue additional currency a national bank, a member of the currency association, shall have circulation outstanding, secured by United States bonds, aggregating not less than 40 per cent. of the capital stock. Additional circulation provided by this act may only be issued upon the recommendation of the Comptroller and approval of the Secretary of the Treasury. The maximum circulation issuable by a bank on United States bonds, and under authority of the act of May 30, 1908, is measured by the capital and surplus of the bank.

The officers of a currency association, on behalf of one of the bank members, may apply for authority to issue additional circulation to an amount not exceeding 75 per cent. of the cash value of the securities or commercial paper deposited with the association, and upon deposit of state, city, town, county, or other municipal bonds of the character prescribed by the act may obtain for issue circulating notes to the extent of 90 per cent. of the market value of the bonds deposited. The issue of additional circulation on commercial paper, however, is limited to 30 per cent. of the unimpaired capital and surplus.

The act contemplates that no additional circulation shall be permitted to be issued unless, in the judgment of the Secretary of the Treasury, conditions in the country at large, or in a special locality, warrant such action, and under section 8 of the act it is made the duty of the Secretary of the Treasury to obtain information with reference to the value and character of securities authorized to be accepted, and from time to time to furnish information to national-banking associations as to such securities as would be acceptable under the provisions of the act.

The act further provides for an issue of circulating notes and the incorporation of the statement upon their face that

"they are secured by United States bonds or other securities," certified by the written or engraved signatures of the Treasurer and Register and by the imprint of the seal of the Treasury. They shall also express upon their face the promise of the association receiving the same to pay on demand, attested by the signature of the president or vice-president and cashier. Under this requirement, circulation has been prepared for every national-banking association, and there is stored in the reserve vault of the bureau a stock of incomplete currency amounting to $500,000,000. So far, no circulating notes, other than those secured by United States bonds, have been issued, but all incomplete currency shipped to a bank bears the legend quoted.

On June 30, 1910, the number of national banks reporting was 7145, with paid-in capital of $989,567,114 and surplus of $644,857,482.82. Of these banks, 5699 had circulation secured by United States bonds equal to or exceeding 40 per cent. of the capital, and 1415 circulation less than that proportion.

In less than thirty days after the passage of the emergency-currency act a national-currency association was formed in the District of Columbia, of which all of the eleven banks in the District were members. The aggregate capital and surplus of the banks at that time were $5,202,000 and $3,942,000 respectively. . . .

While the formation of other currency associations was undertaken, none was perfected in a manner acceptable to the Secretary of the Treasury until the midsummer of 1910, by reason of what were regarded as insurmountable obstacles on the part of banks interested. These obstacles, however, were in a large measure overcome by a revised construction of the law.

Banking power of the United States. The following table shows for 1910 the banking power of the United States, including the island possessions, as indicated by the volume of capital, surplus, deposits, and circulation.

Amounts in million dollars.

	Number	Capital	Surplus, etc.	Deposits	Circulation	Total
National banks	7,145	$ 989.5	$ 861.4	*a* $ 5,341.7	$675.6	7,868.3
State, etc., banks..	15,950	890.3	1,091.0	9,996.1	.....	12,553.6
Non-reporting banks *b*	4,168	77.1	28.3	521.6	.....	627.1
	27,263	$1,957.1	$1,980.8	$15,859.5	$675.6	21,049.2

a Includes government deposits.
b Number of banks and amounts estimated upon statements from reporting private banks.

PLAN FOR MONETARY LEGISLATION

[The act of Congress, May 30, 1908, provided for a national monetary commission to inquire into and report to Congress what changes were necessary or desirable, in the monetary system of the United States, or in the laws relating to banking and currency. After extended inquiries and public discussion, the Commission submitted its report to Congress in January, 1912. The principal defects to be remedied were summarized in the following propositions in Senate Document 243 (Jan. 9, 1912), 62d Congress, 2d session, pp. 6–9.]

Defects of our present monetary system:

1. We have no provision for the concentration of the cash reserves of the banks and for their mobilization and use wherever needed in times of trouble. Experience has shown that the scattered cash reserves of our banks are inadequate for purposes of assistance or defense at such times.

2. Antiquated Federal and State laws restrict the use of bank reserves and prohibit the lending power of banks at times when, in the presence of unusual demands, reserves should be freely used and credit liberally extended to all deserving customers.

3. Our banks also lack adequate means available for use at any time to replenish their reserves or increase their loaning powers when necessary to meet normal or unusual demands.

4. Of our various forms of currency the bank-note issue is the only one which we might expect to respond to the changing needs of business by automatic expansion and contraction, but this issue is deprived of such qualities by the fact that its volume is largely dependent upon the amount and price of United States bonds.

5. We lack means to insure such effective coöperation on

the part of banks as is necessary to protect their own and the public interests in times of stress or crisis. There is no coöperation of any kind among banks outside the clearing-house cities. While clearing-house organizations of banks have been able to render valuable services within a limited sphere for local communities, the lack of means to secure their coöperation or affiliation in broader fields makes it impossible to use these or similar local agencies to prevent panics or avert calamitous disturbances affecting the country at large. These organizations have, in fact, never been able to prevent the suspension of cash payments by financial institutions in their own localities in cases of emergency.

6. We have no effective agency covering the entire country which affords necessary facilities for making domestic exchanges between different localities and sections, or which can prevent disastrous disruption of all such exchanges in times of serious trouble.

7. We have no instrumentality that can deal effectively with the broad questions which, from an international standpoint, affect the credit and status of the United States as one of the great financial powers of the world. In times of threatened trouble or of actual panic these questions, which involve the course of foreign exchange and the international movements of gold, are even more important to us from a national than from an international standpoint.

8. The lack of commercial paper of an established standard, issued for agricultural, industrial, and commercial purposes, available for investments by banks, leads to an unhealthy congestion of loanable funds in great centers and hinders the development of the productive forces of the country.

9. The narrow character of our discount market, with its limited range of safe and profitable investments for banks, results in sending the surplus money of all sections, in excess of reserves and local demands, to New York, where it is usually loaned out on call on Stock Exchange securities, tending to promote dangerous speculation and inevitably leading to

injurious disturbances in reserves. This concentration of surplus money and available funds in New York imposes upon the managers of the banks of that city the vast responsibilities which are inherent in the control of a large proportion of the banking resources of the country.

10. The absence of a broad discount market in our system, taken together with the restrictive treatment of reserves, creates at times when serious financial disturbances are anticipated a condition of dependence on the part of individual banks throughout the country, and at the same time places the farmers and others engaged in productive industries at a great disadvantage in securing the credit they require for the growth, retention, and the distribution of their products.

11. There is a marked lack of equality in credit facilities between different sections of the country, reflected in less favored communities, in retarded development, and great disparity in rates of discount.

12. Our system lacks an agency whose influence can be made effective in securing greater uniformity, steadiness, and reasonableness of rates of discount in all parts of the country.

13. We have no effective agency that can surely provide adequate banking facilities for different regions promptly and on reasonable terms to meet the ordinary or unusual demands for credit or currency necessary for moving crops or for other legitimate purposes.

14. We have no power to enforce the adoption of uniform standards with regard to capital, reserves, examinations, and the character and publicity of reports of all banks in the different sections of the country.

15. We have no American banking institutions in foreign countries. The organization of such banks is necessary for the development of our foreign trade.

16. The provision that national banks shall not make loans upon real estate restricts their power to serve farmers and other borrowers in rural communities.

17. The provision of law under which the Government acts

as custodian of its own funds results in irregular withdrawals of money from circulation and bank reserves in periods of excessive Government revenues, and in the return of these funds into circulation only in periods of deficient revenues. Recent efforts to modify the Independent Treasury system by a partial distribution of the public moneys among national banks have resulted, it is charged, in discrimination and favoritism in the treatment of different banks.

[To remedy these defects the Commission drafted a bill for a "National Reserve Association," a bank for banks, which in its main features bears some likeness to the earlier First and Second Banks of the United States, and to the great central banks of Europe. The proposal is popularly known as the Aldrich Plan, because Senator Aldrich was chairman of the Commission. The essential financial features of the bill are here taken from Senate Document 243, aforesaid, pp. 43–72, many details of the organization and control, and less important expressions, being omitted.]

§ 1. **Charter, capital, location.** The National Reserve Association of the United States . . . is created and established for a term of fifty years [with] an authorized capital equal in amount to 20 per cent. of the paid-in and unimpaired capital of all banks eligible for membership. . . . $200,000,000 of the capital stock shall be subscribed and $100,000,000 of its capital shall be paid in cash. . . . The head office shall be located in Washington, D. C.

§ 2. [Corporate powers set forth.]

§ 3. **Membership of banks.** All national banks, and all banks or trust companies chartered by the laws of any State of the United States or of the District of Columbia, complying with the requirements for membership in the said National Reserve Association . . . may subscribe to its capital to an amount equal to 20 per cent. of the paid-in and unimpaired capital of the subscribing banks and not more nor less; . . . Fifty per cent. of the subscriptions . . . shall be fully paid in; the remainder . . . shall become a liability of the subscribers, subject to call. . . .

[The subscriptions of State banks or trust companies are made subject to their complying with conditions substantially the same as to amount of capital and surplus, percentage of reserves, etc., and submission to examinations, as those imposed upon the national banks.]

§§4–18 [These sections designate in all needed detail the plans of organization and administration. A committee of three Cabinet officers is designated (§4) to effect the first organization. There are to be fifteen (or more) districts with a branch and a local association of subscribing banks in each district (§5, §6). Each local association (§7) and each branch (§8) and the whole association (§9) is to have a board of directors, chosen by a somewhat complex method of plural voting, and representing the banks and agricultural, commercial and industrial interests. The board of the National Association is to have as *ex officio* members the Secretaries of the Treasury, of Agriculture, and of Commerce and Labor, and the Comptroller of the Currency. The "governor" of the Association shall be selected by the President of the United States from a list (§10). Duties of directors in organizing the Association are indicated (§11). Shares of capital stock in the Association are to be owned not otherwise than by subscribing banks (§12). Exemption from local and State taxation except upon real estate (§13). An executive committee (§14) and a board of examination (§15) are to be elected by the Board. Managers of branches (§16). Organization of local associations (§17). List of banks and of shares of stock in the Association to be kept (§18). Several of these features (especially §§7–10) have called forth much discussion because of the fear of centralization of control over the great financial institutions.]

§ 19. **Earnings and dividends.** The earnings of the National Reserve Association shall be disposed of in the following manner: After the payment of all expenses and the franchise and other taxes not provided for in this section, the shareholders shall be entitled to receive an annual dividend of 4 per cent. on the paid-in capital, which dividend shall be cumulative. Further annual net earnings shall be disposed of as follows: First, a contingent fund shall be created, which shall be maintained at an amount equal to 1 per cent. on the paid-in capital, and shall not exceed in any event $2,000,000, and shall be used to meet any possible losses. Such fund shall, upon the final dissolution of the National Reserve Association, be paid to the United States and shall

not under any circumstances be included in the book value of the stock or be paid to the shareholders. Second, one-half of additional net earnings shall be paid into the surplus fund of the National Reserve Association until said fund shall amount to 20 per cent. of the paid-in capital, one-fourth shall be paid to the United States as a franchise tax, and one-fourth shall be paid to the shareholders, until the shareholders' dividend shall amount to 5 per cent. per annum on the paid-in capital: Provided, That no such dividends, exclusive of the cumulative dividends above provided for, shall at any time be paid in excess of 5 per cent. in any one year. Whenever and so long as the contingent fund has been provided for and the five per cent. dividend has been paid to shareholders, one-half of the additional earnings shall be paid to the United States as a franchise tax. Whenever and so long as the surplus fund of the National Reserve Association amounts to 20 per cent. of the paid-in capital and the shareholders shall have received dividends not exceeding 5 per cent., all excess earnings shall be paid to the United States as a franchise tax.

§ 20. **Local associations to guarantee commercial paper.** Any member of a local association may apply to such association for a guaranty of the commercial paper which it desires to rediscount at the branch of the National Reserve Association in its district. Any such bank receiving a guaranty from a local association shall pay a commission to the local association, to be fixed in each case by its board of directors. Expenses and losses in excess of commissions shall be met by an assessment of the members of the local association in proportion to the ratio which their capital and surplus bears to the aggregate capital and surplus of the members of the local association, which assessment shall be made by its board of directors, and the commission received for such guaranty, after the payment of expenses and possible losses, shall be distributed among the several banks of the local association in the same proportion. A local association shall have authority to require security from any bank offering paper for

guaranty, or it may decline to grant the application. The total amount of guaranties by a local association to the National Reserve Association shall not at any time exceed the aggregate capital and surplus of the banks forming the guaranteeing association.

§ 21. **Local associations and clearing houses.** Any local association may by a vote of three-fourths of its members and with the approval of the National Reserve Association, assume and exercise such of the powers and functions of a clearing house as are not inconsistent with the purposes of this act. The National Reserve Association may require any local association to perform such services in facilitating the domestic exchanges of the National Reserve Association as the public interests may require.

§ 22. **Functions of the National Reserve Association.** All of its privileges and advantages . . . shall be equitably extended to every bank of any of the classes herein defined which shall subscribe to its proportion of the capital stock and shall otherwise conform to the requirements of this act. [Proviso, power of suspending a bank.]

§ 23. It shall be the principal fiscal agent of the United States. The government of the United States shall . . . deposit its general funds, and . . . all receipts of the Government, exclusive of trust funds, and make all disbursements through said association and its branches.

§ 24. Its sole depositors shall be the government of the United States and banks owning its stock. . . . All its domestic transactions . . . shall be confined to the Government and the subscribing banks, with the exception of the purchase or sale of Government or State securities or securities of foreign governments or of gold coin or bullion.

§ 25. It shall pay no interest on deposits.

§ 26. It may through a branch rediscount for and with the indorsement of any bank having a deposit with it, notes and bills of exchange arising out of commercial transactions . . . and not . . . drawn for the purpose of carrying stocks,

bonds, or other investment securities. . . . [Details as to maturity and amount and kinds of notes rediscounted, §§ 27–29.]

§ 30. It shall have authority to fix its rates of discount from time to time, which when so fixed shall be published, and shall be uniform throughout the United States.

§ 31. National banks are authorized to accept drafts or bills of exchange drawn upon them, having not more than four months to run, properly secured, and arising out of commercial transactions. The amount of such acceptances outstanding shall not exceed one-half of the capital and surplus.

§ 32. The National Reserve Association may purchase from a subscribing bank acceptances of banks or acceptors of unquestioned financial responsibility arising out of commercial transactions. Such acceptances must have not exceeding ninety days to run, and must be of a character generally known in the market as prime bills.

§ 33. It may invest in United States bonds; also in obligations, having not more than one year to run, of the United States or its dependencies, or of any State, or of foreign governments.

§ 34. It shall have power, both at home and abroad, to deal in gold coin or bullion, to make loans thereon, and to contract for loans of gold coin or bullion, giving therefor, when necessary, acceptable security, including the hypothecation of any of its holdings of United States bonds.

§ 35. It shall have power to purchase from its subscribing banks and to sell, with or without its indorsement, checks or bills of exchange, arising out of commercial transactions as hereinbefore defined, payable in such foreign countries as its board of directors . . . may determine. These bills of exchange must have not exceeding ninety days to run, and must bear the signatures of two or more responsible parties, of which the last one shall be that of a subscribing bank.

§ 36. It shall have power to open and maintain banking accounts in foreign countries and to establish agencies in foreign countries for the purpose of purchasing, selling, and

collecting foreign bills of exchange, and it shall have authority to buy and sell, with or without its indorsement, through such correspondents or agencies, checks or prime foreign bills of exchange arising out of commercial transactions, which have not exceeding ninety days to run, and which bear the signatures of two or more responsible parties.

§ 37. [Duty to transfer credit balances, by mail, telegraph, or otherwise.]

§ 38. It may purchase, acquire, hold, and convey real estate for the following purposes and for no other: [Conditions specified].

§ 39. **Reserves of subscribing banks.** All subscribing banks must conform to the following requirements as to reserves to be held against deposits of various classes, but the deposit balance of any subscribing bank in the National Reserve Association and any notes of the National Reserve Association which it holds may be counted as the whole or any part of its required reserve:

First. On demand deposits: National banks in different localities shall maintain the same percentages of reserve against demand deposits as is now required by law, and the same percentages of reserve against demand deposits shall be required of all other subscribing banks in the same localities.

Second. On time deposits: All time deposits and moneys held in trust payable or maturing within thirty days shall be subject to the same reserve requirements as demand deposits in the same locality. All time deposits and moneys held in trust payable or maturing more than thirty days from date shall be subject to the same reserve requirements as demand deposits for the thirty days preceding their maturity, but no reserves shall be required therefor except for this period. Such time deposits and moneys held in trust, payable only at a stated time not less than thirty days from date of deposit, must be represented by certificates or instruments in writing and must not be allowed to be withdrawn before the time specified without thirty days' notice.

§ 40. National banks may loan not more than 30 per cent. of their time deposits, as herein defined, upon improved and unencumbered real estate, such loans not to exceed 50 per cent. of the actual value of the property, which property shall be situated in the vicinity or in the territory directly tributary to the bank: Provided, That this privilege shall not be extended to banks acting as reserve agents for banks or trust companies.

§ 41. All demand liabilities, including deposits and circulating notes, of the National Reserve Association shall be covered to the extent of 50 per cent. by a reserve of gold (including foreign gold coin and gold bullion) or other money of the United States which the national banks are now authorized to hold as a part of their legal reserve: Provided, That whenever and so long as such reserve shall fall and remain below 50 per cent. the National Reserve Association shall pay a special tax upon the deficiency of reserve at a rate increasing in proportion to such deficiency as follows: For each 2½ per cent. or fraction thereof that the reserve falls below 50 per cent. a tax shall be levied at the rate of 1½ per cent. per annum; Provided further, That no additional circulating notes shall be issued whenever and so long as the amount of such reserve falls below 33⅓ per cent. of its outstanding notes.

§ 42. In computing the demand liabilities of the National Reserve Association, a sum equal to one-half of the amount of the United States bonds held by the association which have been purchased from national banks, and which had previously been deposited by such banks to secure their circulating notes, shall be deducted from the amount of such liabilities.

§§ 43–46. [Details as to reports of the National Reserve Association and of the subscribing banks.]

§ 47. **Bank-note issues.** All provisions of law requiring national banks to hold or to transfer and deliver to the Treasurer of the United States bonds of the United States other

than those required to secure outstanding circulating notes and Government deposits as hereby repealed.

§ 48. There shall be no further issue of circulating notes by any national bank beyond the amount now outstanding. National banks may maintain their present note issue, but whenever a bank retires the whole or any part of its existing issue its right to reissue the notes so retired shall thereupon cease.

§ 49. The National Reserve Association shall, for a period of one year from the date of its organization, offer to purchase at a price not less than par and accrued interest the 2 per cent. bonds held by subscribing national banks and deposited to secure their circulating notes. It shall take over the bonds so purchased and assume responsibility for the redemption upon presentation of outstanding notes secured thereby. It shall issue, on terms herein provided, its own notes as the outstanding notes secured by such bonds so held shall be presented for redemption and may issue further notes from time to time to meet business requirements, it being the policy of the United States to retire as rapidly as possible, consistent with the public interests, bond-secured circulation and to substitute therefor notes . . . of a character and secured and redeemed in the manner provided for in this act.

§ 50. All note issues of the National Reserve Association shall at all times be covered by legal reserves to the extent required by section 41 of this act and by notes or bills of exchange arising out of commercial transactions as hereinbefore defined or obligations of the United States.

§ 51. Any notes of the National Reserve Association in circulation at any time in excess of $900,000,000 which are not covered by an equal amount of lawful money, gold bullion, or foreign gold coin held by said association, shall pay a special tax at the rate of 1½ per cent. per annum, and any notes in excess of $1,200,000,000 not so covered shall pay a special tax at the rate of 5 per cent. per annum: Provided, That

in computing said amounts . . . the aggregate amount of any national-bank notes then outstanding shall be included.

§ 52. The circulating notes of the National Reserve Association shall constitute a first lien upon all its assets and shall be redeemable in lawful money on presentation at the head office of said association or any of its branches. It shall be its duty to maintain a parity of value of its circulating notes with the standard established by the first section of the act of March 14, 1900, entitled "An act to define and fix the standard of value, to maintain the parity of all forms of money issued or coined by the United States, to refund the public debt, and for other purposes."

§ 53. The circulating notes of the National Reserve Association shall be received at par in payment of all taxes, excises, and other dues to the United States, and for all salaries and other debts and demands owing by the United States to individuals, firms, corporations, or associations, except obligations of the Government which are by their terms specifically payable in gold, and for all debts due from or by one bank or trust company to another, and for all obligations due to any bank or trust company.

§ 54. The National Reserve Association and its branches shall at once, upon application and without charge for transportation, forward its circulating notes to any depositing bank against its credit balance.

§ 55. **United States bonds.** Upon application of the National Reserve Association the Secretary of the Treasury shall exchange the 2 per cent. bonds of the United States bearing the circulation privilege purchased from subscribing banks for 3 per cent. bonds of the United States without the circulation privilege, payable after fifty years from the date of issue. The National Reserve Association shall hold the 3 per cent. bonds so issued during the period of its corporate existence: Provided, That after five years from the date of its organization the Secretary of the Treasury may at his option

permit it to sell not more than $50,000,000 of such bonds annually: And provided further, That the United States reserves the right at any time to pay any of such bonds before maturity, or to purchase any of them at par for the trustees of the postal savings, or otherwise.

§ 56. The National Reserve Association shall pay to the Government a special franchise tax of 1½ per cent. annually during the period of its charter upon an amount equal to the par value of such United States bonds transferred to it by the subscribing banks.

§ 57. **Banking in foreign countries.** Banking corporations for carrying on the business of banking in foreign countries and in aid of the commerce of the United States with foreign countries and to act when required as fiscal agents of the United States in such countries may be formed . . . under prescribed regulations, but shall not be authorized to receive deposits in the United States nor transact any domestic business not necessarily related to the business being done in foreign countries or in the dependencies of the United States. [Authority and power conferred; conduct regulated.]

§ 58. [Congress reserves right to alter or amend at the end of any decennial period.]

§ 59. [Acts inconsistent repealed.]

THE TRADE BALANCE OF THE UNITED STATES

[Among the valuable papers published by the National Monetary Commission is one of the foregoing title by George Paish, editor of *The Statist* (part of Senate Document 579, 61st Congress, 2d session, 1910, pp. 151–213). The following extracts serve to epitomize the argument which is developed in much greater detail and which, in a very convincing way, exposes the error of the popular view that balances of accounts for merchandise exports and imports are settled by corresponding gold imports and exports. The figures given are mostly for the years 1908–09.]

On trade balances [page 153]. The term "trade balance" is generally used for the purpose of indicating the excess value of a country's exports of merchandise over the value of its imports of merchandise or the excess value of a country's imports of merchandise over the value of its exports of merchandise. In monetary circles the term is employed to denote the ability of a country to import supplies of the precious metals. If the rate of exchange of one country upon other countries is at the level which permits of gold imports, it is said that the balance of trade is in favor of the country importing the gold. On the other hand, if the rate of exchange of any country is at a level which admits of gold exports, the balance of trade is said to be against the country exporting the gold. In the sixteenth, seventeenth, and eighteenth centuries a favorable trade balance was a matter of great concern to statesmen and to financiers. At that time it was supposed that any country which imported goods of greater value than the goods it exported would be seriously injured by having to make payment in the precious metals for the difference between the value of the goods imported and the value of the goods exported, and that any country

which persisted in purchasing goods of greater value than the goods it exported would be totally drained of its stock of the precious metals and would be ruined. The theory of the supreme importance of a balance of exports over imports was known as the "Mercantile system." . . .

The great change in the theory of commerce that has taken place in modern times is due to the recognition of the fact that the volume of trade which any country enjoys quickly adjusts itself to the needs of that country, and that the effect of a sudden disturbing influence to trade—such as a crop failure, labor troubles, etc., which temporarily reduce a nation's exporting power—can be got over by financial operations in the great international money markets, and that excessive drains of the precious metals are not now to be apprehended. Experience has shown that apart from sudden catastrophes the foreign trade of every country is of a very elastic character, that the volume of imports or of exports quickly responds to the necessities of the case, and that no country can have an adverse balance of trade except for a short time and as a consequence of some unexpected disaster which temporarily diminishes its power to make payment for goods imported. Even at such times countries in good credit have no difficulty in borrowing temporarily or permanently the sums required to settle the balance due to other countries for commodities purchased or obligations incurred prior to the disturbing event—a process which averts any excessive denudation of the stock of the precious metals possessed by the country experiencing the disaster. . . .

Lending and borrowing countries [page 169]. There is practically no country which neither exports nor imports capital with the exception of Thibet. . . . The chief countries which supply capital to other lands are Great Britain, Germany, France, Holland, Belgium, and Switzerland. . . . Great Britain has about $15,000,000,000 of capital invested abroad and is adding to its colonial and foreign investments at the rate of upwards of $500,000,000 a year. Germany

and France come next with investments of about $8,000,000,000 each. The investments of Holland, Belgium and Switzerland are of much smaller amount, but are nevertheless considerable. The imports of all these five countries largely exceed their exports in consequence of the receipt of interest and of tourist expenditures. In the case of Great Britain the excess of imports over the exports is further largely increased by the earnings of British ships, the tonnage of which forms so large a portion of the world's international shipping facilities. The fleets of other countries are not much more than sufficient to take care of their own trade in the aggregate; indeed, in most cases they are insufficient for this purpose, and the deficiency is made good by the British mercantile marine.

The principal countries whose exports exceed their imports in consequence of the large amount of interest they have to pay on capital borrowed from other lands are the United States, the Australasian colonies of Great Britain, British India, Argentina, Brazil, and Mexico. Several other countries whose imports now exceed their exports will eventually come into this category. At the present time Canada's imports largely exceed her exports in consequence of the vast amount of capital—about $200,000,000 a year—which she is borrowing from other lands—almost entirely from Great Britain. In the course of time the Canadian indebtedness to other countries and the expenditure of her tourists, etc., will be so great that her exports will exceed her imports, although large amounts of capital will continue to flow into the country each year. Of course Canada will have no difficulty in making these interest payments, having regard to the rapid growth in the annual amount of wealth created by means of the capital she is importing. China, Japan, and Chile are other instances of the inflow of large amounts of foreign capital. . . .

Europe's capital investments in the United States [pages 174–176]. Great Britain possesses about $3,500,000,000 of

American securities. . . . The French investments in the United States, including the Pennsylvania Railroad and other loans placed in Paris since 1902, amount to nearly $500,000,000. . . . German bankers place the amount of the German investments in American securities at about $1,000,000,000. The amount of Dutch capital in the United States is about $750,000,000. American securities are also held in Belgium, Switzerland, and in other countries. In the aggregate the amount of European capital invested in "permanent" securities in the United States is approximately $6,000,000,000.

Beyond the fixed capital invested by Europe in the United States, account has to be taken of the floating loans made by Europe to America. These floating loans are mainly incurred in the spring and summer months in anticipation of the produce shipments from the States in the fall months and they are then largely liquidated. The amount of the floating debt of the United States to Europe in the form of produce bills, finance bills, loans against securities, overdrafts, etc., averages about $400,000,000, reaching a larger sum in July and early August and falling to a much lower sum at the end of December. The rate of interest paid upon this floating debt in so far as it consists of produce bills is a very low one, the rate of interest charged on this class of loan being less than that on any other kind of security.

Including both the fixed investments and the floating loans, the amount of capital borrowed by the United States from other countries is about $6,500,000,000, the annual interest charge upon which is about $300,000,000.

An offset to the large amount of capital invested in the United States is the capital invested by American citizens in other countries, more especially in Mexico, Canada, in the Southern American States, in the Philippines, in Cuba, etc. . . . The amount of American capital invested in other lands in this manner both publicly and privately is probably $1,500,000,000 yielding an income of about $75,000,000 a year. By deducting the interest—$75,000,000—received upon

American capital placed abroad from the interest—$300,000,000—which the United States pay upon capital supplied to them by other lands, I arrive at a net payment of $225,000,000 by the United States to other countries for interest and dividends upon capital. This sum the United States has to remit each year by exports of produce.

The value to the United States of loans of capital by other lands [page 177]. The capital obtained by America from other lands, mainly from Great Britain, was chiefly for the purpose of extending and improving the railway system of the country. No one can survey the remarkable growth in the production, wealth, and population of the United States without expressing his appreciation of the great part played by railway extensions in bringing about that growth. The extension of railways alone made it possible to bring into cultivation the vast tracts of virgin lands that are now under the plow. Without railways the United States could not now produce annually agricultural wealth of the value of about $8,000,000,000. Again the extension of railways alone made it possible to reach and to develop upward of $2,000,000,000 of mineral wealth per annum. It is the railways that enable the people of the United States to reach and to obtain for their use the vast quantity of lumber annually cut from the forests. Lastly, the immense manufacturing industries of the States which now distribute over $3,000,000,000 in wages could never have been built up but for the construction of railways.

The provision of some $6,500,000,000 of capital to the United States by older countries, mainly for railway construction, has enabled the American people to devote their rapidly growing savings to the building and furnishing of homes, to the equipment of manufactories, to fitting out retail establishments, and to other purposes to a much greater extent than otherwise would have been possible, and in this way the foreign capital has greatly accelerated the growth of population, production, and wealth. By the use of the $6,500,000,000 of

capital obtained from other countries the annual production of wealth by the United States has, I calculate, been increased to a nearly corresponding extent and the accumulated wealth of the country has been increased by many times the amount of the capital borrowed. The additional value given to land alone by the construction of railways is so vast and so apparent that it needs no demonstration. The increase in the annual production of wealth by the United States rendered possible by the importation of capital has been at least twenty times greater than the sum paid for interest. The investment of this capital by the older countries in the United States has thus brought advantages which cannot easily be exaggerated. . . .

Tourist and other expenditures [page 179]. The number of American citizens visiting other lands in the course of the year is now upward of 200,000. The data I have been able to obtain as to the expenditures of these tourists shows that the sum expended by them approximates to $1,000 per person. This sum includes merely the passage money and the sums expended in other countries for food, transportation, and other miscellaneous expenditures. It does not include the sums expended upon works of art, jewelry, clothing, etc., which are declared at the customs and are included in the value of the goods imported into the United States. In the aggregate, tourist expenditures for the purposes I have mentioned reach a total of about $200,000,000. On the other hand, a number of foreign tourists visit the United States and their expenditures should be placed against those of American citizens. . . . Apparently the number of visitors, other than immigrants passing through to Canada, was about 30,000. The expenditures of visitors to the United States may be taken at about $1,000 per person, excluding all shipping transportation, or an aggregate sum of visitors' expenditures in the United States of $30,000,000. On balance, therefore, the United States has to pay to other countries

a sum of about $170,000,000 a year to cover tourist expenditures. . . .

[Page 182] For all practical purposes I calculate that the money brought into the country by immigrants about counterbalances the money taken out of the country by emigrants returning to their native lands and by "other than cabin passengers" visiting other countries.

Remittances to friends. The great prosperity of the United States enables many of its citizens who have come from other lands to make gifts of large sums of money in the aggregate to friends in the old countries. The remittance of this money means that the United States has to send considerable quantities of produce abroad for which there is no corresponding item on the import side of the account, as the produce goes for the purpose of providing the funds necessary to cash the postal money orders and other drafts remitted to friends. The amount of these remittances is exceedingly difficult to calculate, but that it is large every one admits. . . .

With the data at my disposal I do not feel justified in placing the amount of money remitted by American citizens to friends in other countries at a larger figure than $150,000,000. This is still a very large sum, and is a factor of very great importance in calculating the trade balance of the United States and the amount of produce which has to be remitted for various purposes other than to pay for goods imported.

Freights [page 186]. The United States possesses a mercantile marine large enough to convey but a small portion of the produce they export and import, and considerable payments have to be made for shipping services. In 1907–8 the imports into the United States by sea were valued at $1,123,000,000. Of this amount $152,000,000, or 13.5 per cent., was carried in American vessels and $971,000,000, or 86.5 per cent., in foreign vessels. In the same year the exports

from the United States were valued at $1,670,000,000, of which amount the produce conveyed in American vessels was valued at $120,000,000, representing a proportion of only 7.2 per cent. and the balance of $1,550,000,000, or 93.8 per cent., was conveyed in foreign vessels. The sum which the United States had to pay to other lands for marine transportation is much smaller than is usually calculated. . . . After taking all these factors into consideration I calculate that the net sum which the United States pays to other countries for the transportation of merchandise is about $25,000,000 per annum. Payment of this sum has also to be remitted to other lands by exports of produce. . . .

Insurance [page 190]. A large amount of fire insurance is written each year in the United States by English and other offices and the sums payable to those officers in respect of insurance reaches a considerable figure. On the other hand, the fire losses of foreign officers in the United States are heavy and the profit which alone accrues to other countries is not a large item, at any rate it has not been a large item in the recent past. On the other hand, American life assurance offices transact a fairly large business in foreign countries. . . . On balance, if all kinds of insurance and assurance are combined, America probably has to pay very little to other lands and the factor of insurance in calculating the trade balance may consequently be ignored.

Summary of remittances for interest; tourist expenditures, gifts to friends, and freight charges. Thus I arrive at the conclusion that the United States have on balance to pay other countries a net sum . . . of about $595,000,000 for purposes other than for the purchase of goods from other countries. In other words, the exports of merchandise, gold, and silver from the United States must exceed the aggregate value of the merchandise gold and silver imported by nearly $600,000,000 in order that payment may be made for interest, tourist expenditures, etc. That is to say, America requires an excess of exports over imports of nearly $600,000,000 per an-

num in order to settle her trade balance. If she has a larger balance of exports over imports than this figure, she is repaying a portion of her obligations to other lands. If she has less than this sum, she is borrowing additional capital from other lands. It should, however, be clearly understood that this amount is subject to wide fluctuations, and is by no means a hard and fast obligation. . . . Taking all these circumstances into account, I calculate that in a year of depression the obligation of the United States to other countries for interest, tourist expenditures, remittances to friends, freight, etc., is about $500,000,000 and that in years of normal trade activity it is about $600,000,000.

Perhaps the situation will be more clearly realized if I set it out in tabular form:

FOREIGN TRADE OF THE UNITED STATES, 1908–9.

MERCHANDISE:			
Exports:			
Domestic	$1,638,000,000		
Foreign	25,000,000		
Total	1,663,000,000		
Imports	1,312,000,000		
Excess of merchandise exports over imports			$351,000,000
GOLD:			
Exports	92,000,000		
Imports	44,000,000		
Excess of gold exports over imports		48,000,000	
SILVER:			
Exports	56,000,000		
Imports	44,000,000		
Excess of silver exports over imports		12,000,000	
Total excess of merchandise, gold, and silver exports over imports			$411,000,000

Remittances for Interest, etc.:		
Interest [1]	$250,000,000	
Tourist expenditures	170,000,000	
Remittances to friends	150,000,000	
Freight [2]	25,000,000	
Total remittances		$595,000,000
Excess of sum remitted for interest, tourists, to friends, and for freights over trade balance		$184,000,000

[1] [A discrepancy appears here; for above the interest payable abroad is put at $300,000,000 and that coming from abroad at $75,000,000, leaving a balance of $225,000,000 payable. Ed.]

[2] [The writer does not set forth the debits and credits entering to produce this balance, but implies that these items are about in proportion to the value of goods carried, $2,521,000,000 by foreign and $272,000,000 by American vessels, or about 90.3 per cent. and 9.7 per cent. of the total. Proportional freights would be $28,000,000 to foreigners, and $3,000,000 to American shipowners, to give a balance of $25,000,000. Ed.]

SOME FINDINGS ON WOOL

[In the tariff act of August 5, 1909, the President of the United States was authorized to supply "persons" "to secure information" regarding the working of the tariff laws. He appointed a "Tariff Board" of five members, with H. C. Emery, professor of economics in Yale University, as Chairman. The Board has made reports on the Pulp and news-print paper industry (preliminary) Feb., 1911, and (another report) May, 1911; on Wool and manufactures of wool (Schedule K of the tariff of 1909) Dec. 20, 1911; on Chemicals, oils and paints (Schedule A) Feb. 7, 1912; and on Cotton manufactures March, 1912. The report on Wool, the most voluminous of these, contains 1280 pages of painstaking and detailed information. The main findings of the investigation are compressed in the letter of submittal to the President, from which we here extract nearly one-half, retaining the portions dealing with costs and prices, but omitting the discussion of tariff duties.]

Wool costs [page 10]. The result of the raw-wool investigation establishes the fact that it costs more to grow wool in the United States than in any other country; that the merino wools required in such great volume by our mills are the most expensive of all wools produced; that the highest average cost of production of such wool in the world is in the State of Ohio and contiguous territory; and that the lowest average cost on similar wool is in Australia.

It is not possible to state in exact terms the actual cost of producing a pound of wool considered by itself, for the simple reason that wool is but one of two products of the same operation.

That is to say, flocks produce both fleeces and mutton—products entirely dissimilar in character and yet produced as the result of the same expenditure for forage and for labor. The board has deemed it best, therefore, for the purpose of

this inquiry, to treat fleeces as the sole product and charge up against their production the entire receipts from other sources. This method gives an accurate return so far as the general results of flock maintenance are concerned; results which are comparable as between various sheep-growing regions.

In order that results from the different sections and from different countries might be more comparable, the item of interest on investment—which varies from 4 to 6 per cent. in Australia and from 8 to 10 per cent. in our Western States —was left for consideration in connection with profits. For a similar reason the actual production cost of harvested crops fed to flocks was used instead of the market value of same. On this account the expense charges shown are materially lower than those commonly quoted in the industry.

Figured in this manner, the board finds:

That after crediting the flock with receipts from all sources other than wool, the latter product, in the case of the fine merino wools of the United States, is going to market with an average charge against it of not less than 12 cents per pound, not including interest on the investment.

That the fine wools of the Ohio region are sold bearing an average charge for production of 19 cents per pound.

That in the States east of the Missouri River wool production is incidental to general farming. Here producers, with the exception of certain-named districts, lay more stress upon the output of the mutton than of wool, and in such cases the receipts from the sale of sheep and lambs ordinarily cover the flock expense, leaving the wool for profit. The position of the fine-wool producers, however, not only of the Ohio region, but of the far West, is radically different.

That in the western part of the United States, where about two-thirds of the sheep of the country are to be found, the "fine" and "fine medium" wools carry an average charge of at least 11 cents per pound, interest not included.

That if account is taken of the entire wool production of the

country, including both fine and coarse wools, the average charge against the clip is about 9½ cents per pound.

That in South America the corresponding charge is between 4 and 5 cents per pound.

That in New Zealand and on the favorably situated runs of Australia it seems clear that at the present range of values for stock sheep and mutton the receipts from other sources than wool are carrying the total flock expense. So that taking Australasia as a whole it appears that a charge of a very few cents per pound lies against the great clips of that region in the aggregate. While the board cannot undertake to name an exact figure in that case, it is certain that the Australasian costs at large fall materially below the average South American.

That in the Western United States the capitalization per head of sheep (inclusive of land) is $5.30 upon which a gross profit of 6.2 per cent. was realized during the twelve months under review. The interest rate in that region ranges from 8 to 10 per cent. per annum.

That the labor, forage, and necessary miscellaneous expenses in the Western United States exceed $2 per head per annum as against an estimated cost, covering the same elements of expense, of less than $1 in Australia and about $1.15 per head in South America. . . . [Here are discussed wool duties and their effects.]

Relative prices [page 14]. On the other hand, prices in this country on the fabrics just referred to are not increased by the full amount of the duty. A collection of representative samples was made in England of goods ranging from those which cannot be imported at all to those which are imported continually. These were then matched with a collection of samples of American-made cloths which were fairly comparable, and the mill prices compared for the same rate. It is found that on goods entirely excluded the nominal rates of duty would reach an ad valorem rate of 150 or even over 200 per cent., but that the American fabric is actually sold in

the market at from only 60 to 80 per cent. higher than similar goods sold abroad.

On sixteen samples of foreign goods, for instance, none of which are imported, the figures are as follows:

Total of foreign prices	$ 41.84
Duties which would have been assessed had they been imported	76.90
Foreign price, plus the duty, if imported	118.74
Actual domestic price of similar fabrics	69.75

Thus, though the nominal duties on such fabrics equal 184 per cent., the actual excess of the domestic price over the foreign price on similar fabrics of this kind is about 67 per cent. This is the result of domestic competition.

At the present time the industry in general is on a competitive basis. Certain specialities may be produced in limited quantities by particular firms which cannot be duplicated successfully by their competitors. This might be the result of secret processes or of some special skill in designing or finishing. This may mean a wide margin of profit per unit of product in individual cases. It should also be noted that even in the case of standard goods the industry is one peculiarly dependent on fashion, and the manufacturer who happens to succeed in anticipating the shifting public demand may sell his goods upon a wide margin over the cost of manufacture and make large profits. Under ordinary circumstances the average manufacturer will find that he can sell a part of his output with a good margin of profit, and that another part which does not meet the public demand will have to be sold close to the cost price or even below.

As to the productive capacity of the country in cloth-making to meet the domestic demand, there is at the present time no indication of any lack of adequate equipment. It is true that some years ago a greatly increased demand for worsted fabrics, assisted by the high tariff on worsted goods and their by-products, made the manufacture of such goods very profitable and the investment alluring, but this led to a rapid

increase of worsted machinery in this country and the building of great modern mills in rapid succession in various parts of the East. A very considerable part of this increase was due to the inflow of foreign capital and the transfer of experienced cloth manufacturers from other countries. The result has been a great increase in competition.

Relative costs of manufacturing. The cost of manufacturing woolen and worsted yarns and cloth in the United States is much higher than in Europe. The main elements of cost of production are cost of plant, material, and labor.

The cost of erecting and equipping both woolen and worsted mills is much higher in this country than in England. The cost of erecting and equipping a woolen mill is about 45 per cent. greater. The same is true of the weaving department of a worsted mill using American machinery.

The excess in cost in the case of worsted spinning is greater, as most of the machinery is imported. This pays a duty of 45 per cent. ad valorem, and to this must be added charges for packing, freight, etc., which makes the foreign machine cost 70 per cent. over or more in this country than abroad. Nor does this include the cost of erection, as does the price to the English manufacturer. The same is true of weaving machinery when imported.

The material is increased in price by the duty on raw wool. The manufacturer who imports his wool must pay the full amount of the duty, and this means either additional working capital or an additional interest charge to be paid. Wools grown in the United States are increased in value by the duty, but not by the full extent of the duty.

Wages are much higher in the United States, but wages are in themselves no necessary indication of relative cost of production. Frequently it is found that high wages and low labor costs go together. The question at once arises whether the labor in American woolen and worsted manufacturing is more efficient than such labor abroad, or whether by more efficient management or greater speed in machinery the

American manufacturer is able to get a larger product per operative in proportion to the difference in wages.

It appears that this particular industry is one in which the high elements of costs in this country are not in general offset by any particular advantage or by any marked superiority in the efficiency of labor. To a certain extent, in fact, European countries have the advantage of us in this latter regard. In the centers of the industry abroad there is an adequate supply of labor which has been trained for generations in this one industry. In the United States a considerable portion of the labor is found to be of unskilled immigrants with no previous experience in manufacture; and in certain centers this population is of a very fluctuating kind, and the manufacturer is obliged continually to break in a new set of inexperienced operatives.

The American tendency to secure the maximum output is noticeable in some cases, but comparing this country with England, at least, it may be said that the possibilities of speed have been practically reached in the latter country. So far as worsted spinning is concerned, the best mills in this country seem to be able to operate with fewer operatives per machine and to get a greater product per operative than in some European countries, but if this means a sacrifice of quality of product to output it is not really a decrease in cost. Looms in the Bradford district run, on the whole, at a higher rate of speed than do looms in the United States.

Furthermore, there is no superiority in American machinery over foreign machinery. As a matter of fact, a large amount of foreign machinery is used in this country, and in the worsted mills covered by the investigation into machine efficiency 87 per cent. of all the machinery, from the scouring of raw wool through to the finished yarn, was imported. Only 22.9 per cent. of looms were imported.

It may be said, then, that, taking the industry as a whole, the American manufacturer practically has no advantage in efficiency of labor and equipment over his foreign competitor,

although this statement is subject to exceptions in the case of particular processes at particular mills. On certain specialties the largest and most efficient American mills are able by skilful organizations materially to reduce the difference in cost.

Detailed figures as to relative costs of production are given in Part III of the report. Roughly summarized they may be expressed as follows:

Tops. The difference in the cost of turning wool into tops in this country and England varies with the quality of the tops. Considering all grades, it may be stated that 80 per cent. presents a rough approximation of the excess of the American cost over the English. This, of course, does not mean 80 per cent. of the value of the tops, but merely 80 per cent. of the conversion cost. The cost of conversion in the case of tops is in any case but a few cents and but a small fraction of the total value of the product, including material. The charges for commission combing in the two countries vary about 60 per cent. The reason for the divergence of the cost figures from the commission charges is explained in the report.

Worsted yarns. The cost of producing yarns varies in different countries according to particular qualities and methods. In England the method of frame spinning is the more common, and on the Continent mule spinning. The latter is the more expensive process. Comparing frame spinning in England with frame spinning in the United States —which is the common method here—it may be said that although there are wide variations in both countries from mill to mill, the conversion cost for the same quality and count of yarns in the United States is about twice that in England. The difference in the cost between the United States and Germany is not so great.

This refers to the mere cost of turning tops into yarn, and of course does not mean that the difference in cost is equal to 100 per cent. of the foreign selling value. The

foreign conversion cost of yarn from tops, except in the case of the finest yarns, is normally less than 20 per cent. of the total market value of the yarn. Care should be taken not to confuse the ratio between manufacturing costs and the ratio between total values, including cost of raw material.

Woolen and worsted industry. The difference in manufacturing cost here and abroad of woolen and worsted fabrics (from yarn to finished cloth) varies greatly, according to the character of the fabrics. The main processes included are weaving, finishing, and dyeing. The figures of the board show that the cost of turning yarn into cloth in the United States compared with England is all the way from 60 per cent. to 170 per cent. higher, according to the character of the fabric. For a great variety of fabrics the American conversion cost is from 100 to 150 per cent. greater than the English cost. This is further substantiated by the fact that the weaving scales per yard of product in the two countries vary in almost exactly the same proportions.

The difference in cost of manufacturing in France and the United States is found to be very close to the difference between England and the United States. On the other hand, the difference in the cost of the manufacture in the United States and Germany is somewhat less.

Further, it should be pointed out that the statement that the difference in the cost of manufacturing cloth is 100 per cent. or more does not mean 100 per cent. of the market value of the cloth. It merely means that, given the same yarn, the cost of weaving and finishing in this country is generally somewhat more than double that in England. It is impossible to express this difference in relation to the total value of the product, since the material going into two different articles have the same conversion cost may vary widely in value; while, on the other hand, the material for the production of exactly the same article may vary widely in value at two different periods and the conversion cost remain exactly the same. . . .

Ready-made clothing [page 18]. The investigation into the ready-made clothing industry shows that the cloth is the largest element in the clothing produced and is equal to one-third of the net wholesale selling price. It varies with the grades of clothing produced, being highest relatively in the cheaper garments. The cost of linings is about 5 per cent. of the net wholesale selling price. The total cost of cloth and woolen materials, taken as a whole, is equal to about 40 per cent. of this price.

In considering the importance of cloth cost to the wearer of clothing, it is necessary to bear in mind the margin between wholesale and retail price. The retail price is usually 50 per cent. or more above the net wholesale price. On this basis about 25 per cent. of the price paid to the retailer goes to the manufacturer of cloth.

Taking the industry as a whole, the cost of material, labor, and all other expense undergone in converting material into finished garments is 80 per cent. of the net wholesale selling price of the finished product. Out of this 20 per cent. margin between the total manufacturing cost and the manufacturer's net selling price comes selling expense, such general expense as cannot be charged directly to manufacturing or selling, and profit. These figures apply particularly to men's clothing, where garments are more standardized and represent costs more easy to determine.

In women's garments the cloth is also the largest single item. In skirts it is equal to 40 per cent. of the net wholesale selling price; on most cloaks equal to between 30 and 35 per cent.; on cheap suits it is over 25 per cent.; and on more expensive varieties it falls below 20 per cent. To the manufacturer, therefore, cloth is not so important an element of cost in women's clothing as in men's. On the other hand, the labor and manufacturing expense are more important in women's clothing. The margin remaining to the manufacturer of women's garments, over and above the cost of materials and expense of converting them into wearing

apparel, is somewhat less than in the men's clothing industry, but selling expenses are considerably lower for these establishments. . . .

Wages and efficiency [page 22]. The investigation as to wages and efficiency covering 35,029 persons and 164 separate occupations shows that the earnings of weavers based upon actual yardage and piece rates per yard, range from $6 to $18 per week, with an average for worsted weavers of $12.36 for males and $9.54 for females, and for woolen weavers an average of $10.63 for males and $10.54 for females. The weekly earnings are based on a week of 55.6 hours, the same as the average hours for the industry in Great Britain.

Of the total 7990 scouring, carding, combing, drawing, and spinning machines and 12,337 weaving looms investigated, 78 per cent. of all the machines excepting looms . . . are of foreign manufacture and 22 per cent. of American make. It is asserted by manufacturers that American-made machines for worsted spinning cannot produce the desired results. Seventy-seven and one-tenth per cent. of the looms in use were made in the United States and 22.9 per cent. in foreign countries.

Of the 35,029 employees, 36.5 per cent. were born in the United States and 63.5 per cent in foreign countries. Thirty-five and one-tenth per cent. of all employees were of the newer immigration from Italy, eastern and southern Europe. The supervisory class was made up principally of persons born in the United States, the British Isles, and Germany.

Eighty-three and three-tenths per cent. of the total employees had no previous experience in the woolen or other manufacturing or mechanical industry before going to work in the woolen mills. Fifty and nine-tenths per cent. of these came directly to the mill from the school or the home and 32.4 per cent. had been employed in agricultural, transportation, trade, domestic service, and other non-manufacturing occupations. About one-sixth (16.6 per cent.) had been in the in-

dustry less than one year and 53.9 per cent. less than five years.

Eighty per cent. of loom production on worsteds and 70 per cent. on woolens, with 20 per cent. of loom stoppages on worsted and 30 per cent. on woolens while weaving, are the manufacturers' desired standards of efficiency. The individual records kept by the Tariff Board of weavers operating 11,080 looms show that the weavers operating 4.1 per cent. of the worsted looms and 2 per cent. of the woolen looms attained a productive efficiency of 90 per cent. and over. On 24.7 per cent. of worsted and 12.9 of woolen looms the efficiency was 80, but less than 90 per cent. On 30.9 per cent. of worsted and 21.6 per cent. of woolen looms the efficiency was 70 but less than 80 per cent. On 34.1 per cent. of worsted and 45.4 per cent. of woolen looms the efficiency was 50 but less than 70 per cent. On 6.2 per cent. of worsted and 18 per cent. of woolen looms the productive efficiency of the weavers fell below 50 per cent.

Seventy per cent. of the weavers were born in the United States, Germany, and the British Isles, and 30 per cent. in Italy, eastern and southeastern Europe. Two menders and burlers were employed for every four weavers and nine looms to correct the imperfections in the woven cloth. Two and eighteen one-hundredths per cent. of the yardage produced was still imperfect after mending and was sold as seconds.

The productive efficiency per one man hour for machine operatives and machines in the scouring, carding, combing, drawing, and spinning departments, with 168 separate labor costs per pound, show wide differences in efficiency and cost, but indicate in general that the lowest labor costs per pound were in mills paying the highest wages.

FINDINGS ON THE WOOL TARIFF

[PRESIDENT TAFT in submitting to Congress the Tariff Board's report on Schedule K, Dec. 20, 1911, made, among other comments, the following (Report, Wool and manufactures of wool, pp. 4–6):]

The report shows that the present method of assessing the duty on raw wool—this is, by a specific rate on the grease pound (i.e., unscoured)—operates to exclude wools of high shrinkage in scouring but fine quality from the American market and thereby lessens the range of wools available to the domestic manufacturer; that the duty on scoured wool of 33 cents per pound is prohibitory. . . .

The report shows in detail the difficulties involved in attempting to state in categorical terms the cost of wool production and the great differences in cost as between different regions and different types of wool. It is found, however, that, taking all varieties in account, the average cost of production for the whole American clip is higher than the cost in the chief competing country by an amount somewhat less than the present duty. . . .

The report shows that the duties on noils, wool wastes, and shoddy, which are adjusted to the rate of 33 cents on scoured wool are prohibitory in the same measure that the duty on scoured wool is prohibitory. In general they are assessed at rates as high as, or higher than, the duties paid on the clean content of wools actually imported. They should be reduced and so adjusted to the rate on wool as to bear their proper proportion to the real rate levied on the actual wool imports.

The duties on many classes of wool manufacture are prohibitory and greatly in excess of the difference in cost of production here and abroad. . . .

On the other hand, the findings show . . . that the prices of domestic fabrics are not raised by the full amount of duty. . . .

Although these duties do not increase prices of domestic goods by anything like their full amount, it is none the less true that such prohibitive duties eliminate the possibility of foreign competition, even in time of scarcity; that they form a temptation to monopoly and conspiracies to control domestic prices; that they are much in excess of the difference in cost of production here and abroad; and that they should be reduced to a point which accords with this principle.

The findings of the board show that in this industry the actual manufacturing cost, aside from the question of the price of materials, is much higher in this country than it is abroad; that in the making of yarn and cloth the domestic woolen or worsted manufacturer has in general no advantage in the form of superior machinery or more efficient labor to offset the higher wages paid in this country. The findings show that the cost of turning wool into yard in this country is about double that in the leading competing country and that the cost of turning yarn into cloth is somewhat more than double. Under the protective policy a great industry, involving the welfare of hundreds of thousands of people, has been established despite these handicaps.

In recommending revision and reduction I therefore urge that action be taken with these facts in mind, to the end that an important and established industry may not be jeopardized.

The Tariff Board reports that no equitable method has been found to levy purely specific duties on woolen and worsted fabrics and that, excepting for a compensatory duty, the rate must be ad valorem on such manufactures. It is important to realize, however, that no flat ad valorem rate on such fabrics can be made to work fairly and effectively. Any single rate which is high enough to equalize the difference in manufacturing cost at home and abroad on highly finished goods, involving such labor, would be prohibitory on cheaper

goods, in which the labor cost is a smaller proportion of the total value. Conversely, a rate only adequate to equalize this difference on cheaper goods would remove protection from the fine-goods manufacture, the increase in which has been one of the striking features of the trade's development in recent years. I therefore recommend that in any revision the importance of a graduated scale of ad valorem duties on cloths be carefully considered and applied.

THE INTERSTATE COMMERCE ACT

["THE Act to Regulate Commerce" was approved Feb. 4, 1887, and went into effect April 5, 1887. It was amended slightly in 1889, and 1908, and greatly in 1906 and again in 1910. Below are given some of the most important sections entire, other whole paragraphs, and a syllabus of the rest of the act. The dates of the acts in which the several features first occurred are in brackets preceding each significant statement, thus indicating the more important changes and the growth of the Act.]

§ 1. (As amended June 29, 1906, April 13, 1908, and June 18, 1910.) [1887] That the provisions of this Act shall apply to any [1906] corporation or any person or persons engaged in the transportation of oil or other commodity, except water and except natural or artificial gas, by means of pipe lines, or partly by pipe lines and partly by railroad, or partly by pipe lines and partly by water, and [1910] to telegraph, telephone, and cable companies (whether wire or wireless) engaged in sending messages from one State, Territory, or District of the United States or to any foreign country, who shall be considered and held to be common carriers within the meaning and purpose of this Act, and to any [1887] common carrier or carriers engaged in the transportation of passengers or property wholly by railroad (or partly by railroad and partly by water when both are used under a common control, management, or arrangement for a continuous carriage or shipment), from one State or Territory of the United States or the District of Columbia, or [1906] from one place in a Territory to another place in the same Territory, [1887] or from any place in the United States to an adjacent foreign country, or from any place in the United States through a foreign country to any other place

in the United States, and also to the transportation in like manner of property shipped from any place in the United States to a foreign country and carried from such place to a port of transshipment, or shipped from a foreign country to any place in the United States and carried to such place from a port of entry either in the United States or an adjacent foreign country: Provided, however, That the provisions of this Act shall not apply to the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property wholly within one State and not shipped to or from a foreign country from or to any State or Territory as aforesaid, [1910] nor shall they apply to the transmission of messages by telephone, telegraph, or cable wholly within one State and not transmitted to or from a foreign country from or to any State or Territory as aforesaid.

[1906] The term "common carrier" as used in this Act shall include express companies and sleeping-car companies. [1887] The term "railroad" as used in this Act shall include all bridges and ferries used or operated in connection with any railroad, and also all the road in use by any corporation operating a railroad, whether owned or operated under a contract, agreement, or lease, [1906] and shall also include all switches, spurs, tracks, and terminal facilities of every kind used or necessary in the transportation of the persons or property designated herein, and also all freight depots, yards, and grounds used or necessary in the transportation or delivery of any of said property; and the term "transportation" shall include [1906] cars and other vehicles and [1887] all instrumentalities [1906] and facilities [1887] of shipment or carriage, [1906] irrespective of ownership or of any contract, express or implied, for the use thereof and all services in connection with the receipt, delivery, elevation, and transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported; and it shall be the duty of every carrier subject to the provisions of this

Act to provide and furnish such transportation upon reasonable request therefor, and to establish through routes and just and reasonable rates applicable thereto; [1910] and to provide reasonable facilities for operating such through routes and to make reasonable rules and regulations with respect to the exchange, interchange, and return of cars used therein, and for the operation of such through routes, and providing for reasonable compensation to those entitled thereto. [1887] All charges made for any service rendered or to be rendered in the transportation of passengers or property, [1910] and for the transmission of messages by telegraph, telephone, or cable, [1887] as aforesaid, or in connection therewith, shall be just and reasonable; and every unjust and unreasonable charge for such service [1906] or any part thereof [1887] is prohibited and declared to be unlawful: [1910] Provided, That messages by telegraph, telephone, or cable, subject to the provisions of this Act, may be classified into day, night, repeated, unrepeated, letter, commercial, press, Government, and such other classes as are just and reasonable, and different rates may be charged for the different classes of messages: And Provided further, That nothing in this Act shall be construed to prevent telephone, telegraph, and cable companies from entering into contracts with common carriers for the exchange of services.

[1910. Classification must be just and reasonable, so also must the regulations and practices such as marking, packing, delivery, etc.]

[1887. Free passes and free transportation prohibited. 1906. Details of excepted classes, as employees, charitable workers, etc.]

[1906. The Commodities Clause.] From and after May first, nineteen hundred and eight, it shall be unlawful for any railroad company to transport from any State, Territory, or the District of Columbia, to any other State, Territory, or the District of Columbia, or to any foreign country, any article or commodity, other than timber and the manufactured products thereof, manufactured, mined, or produced by it, or

under its authority, or which it may own in whole or in part, or in which it may have any interest, direct or indirect, except such articles or commodities as may be necessary and intended for its use in the conduct of its business as a common carrier.

[1906. Switch Connections.] Any common carrier subject to the provisions of this Act, upon application of any lateral, branch line of railroad, or of any shipper tendering interstate traffic for transportation, shall construct, maintain, and operate upon reasonable terms a switch connection . . . where such connection is reasonably practicable and can be put in with safety and will furnish sufficient business to justify the construction and maintenance of the same; and shall furnish cars for the movement of such traffic to the best of its ability without discrimination in favor of or against any such shipper . . . [1906 Switch connections may be ordered by the Commission.]

§ 2. [1887. Unjust discrimination defined and forbidden.] That if any common carrier subject to the provisions of this Act shall, directly or indirectly, by any special rate, rebate, drawback, or other device, charge, demand, collect, or receive from any person or persons a greater or less compensation for any service rendered, or to be rendered, in the transportation of passengers or property, subject to the provisions of this Act, than it charges, demands, collects, or receives from any other person or persons for doing for him or them a like and contemporaneous service in the transportation of a like kind of traffic under substantially similar circumstances and conditions, such common carrier shall be deemed guilty of unjust discrimination, which is hereby prohibited and declared to be unlawful.

§ 3. [1887. Undue or unreasonable preference or advantage forbidden. Facilities for interchange of traffic. Discrimination between connecting lines forbidden. 1903. By Elkins' Act only one shipment at less than published rate necessary to constitute a violation.]

§ 4. [The Long and short haul section.] (As amended June 18, 1910.) [1887] That it shall be unlawful for any

common carrier subject to the provisions of this Act to charge or receive any greater compensation in the aggregate for the transportation of passengers, or of like kind of property, [1910 "under substantially similar circumstances and conditions" omitted] for a shorter than for a longer distance over the same line or route in the same direction, the shorter being included within the longer distance, [1910] or to charge any greater compensation as a through route than the aggregate of the intermediate rates subject to the provisions of this Act; [1887] but this shall not be construed as authorizing any common carrier within the terms of this Act to charge or receive as great compensation for a shorter as for a longer distance: Provided, however, That upon application to the Interstate Commerce Commission such common carrier may in special cases, after investigation, be authorized by the Commission to charge less for longer than for shorter distances for the transportation of passengers or property; and the Commission may from time to time prescribe the extent to which such designated common carrier may be relieved from the operation of this section: [1910] Provided, further, That no rates or charges lawfully existing at the time of the passage of this amendatory Act shall be required to be changed by reason of the provisions of this section prior to the expiration of six months after the passage of this Act, nor in any case where application shall have been filed before the Commission, in accordance with the provisions of this section, until a determination of such application by the Commission.

[1910] Whenever a carrier by railroad shall in competition with a water route or routes reduce the rates on the carriage of any species of freight to or from competitive points, it shall not be permitted to increase such rates unless after it shall be found that such proposed increase rests upon changed conditions other than the elimination of water competition.

§ 5. [1887. The anti-pooling section.] That it shall be unlawful for any common carrier subject to the provisions

of this Act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads, or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid, each day of its continuance shall be deemed a separate offense.

§ 6. [1887, amended 1889, 1906, 1910.. 1887. Printing and posting of schedule of rates, fares and charges, including rules and regulations affecting the same (1906) and icing, storage and transit charges and freight classifications; stricter details. 1887. Freight carried through a foreign country subject to customs duties in case of failure to publish through rates. 1906. Thirty (formerly *ten*) days' notice must be given of any change (formerly *advance*) in rates, etc. Proviso: Commission may modify requirements of this section. 1906. Joint tariffs must specify names of carriers participating. 1887. Every common carrier shall file copies of all contracts, agreements, etc. 1906. Further sharpening of requirement to publish rates; transportation prohibited until rates published; prohibited rates not to be deviated from. Penalty for failure to comply with regulation. 1910. Carriers must furnish written statement of rate. Damages for misstatement.]

§ 7. [1887. Carriage of freights from place of shipment to place of destination must be continuous; contracts to evade forbidden.]

§ 8. [1887. Liability of common carriers for damages.]

§ 9. [1887. Persons claiming to be damaged may elect whether to complain to the Commission or bring suit in a United States court. Officers of defendant may be compelled to testify.]

§ 10. [1887. Penalties for violations of Act by carriers or when the carrier is a corporation, its officers, agents, or employees; for false billing, etc., by carriers, their officers or agents; for false billing, etc., by shippers and other persons; for inducing common carriers to discriminate unjustly: fine and imprisonment. Joint liability with carrier for damages.]

§ 11. [1887. Creating the Interstate Commerce Commission; changed in 1906 by § 24.]

§§ 12, 13, 14. [1887, variously amended in 1889, 1891, 1906, and 1910; empowers the Commission to execute and enforce the Act, lay down methods of procedure, etc.]

§ 15. [Original section wholly superseded June 29, 1906, and amended June 18, 1910. 1906. Powers of the Commission. Com-

mission may determine and prescribe just and reasonable rates and classifications to be observed as maximum charges, and just and reasonable regulations or practices; may order carriers to cease and desist from full extent of violations found. Orders of the Commission effective as prescribed, but in not less than thirty days. Orders shall continue in force not exceeding two years, unless suspended or set aside by Commission or court. When carriers fail to agree on divisions of joint rate, Commission may prescribe proportion of such rate to be received by each carrier. 1910. Commission may investigate new schedules, may suspend them and extend suspension. Burden of proof on carrier as to reasonableness of increased rates. 1906. Commission may establish through routes and joint rates and classifications. 1910. Limitation on through route power. Shipper may select route. Unlawful to give or receive information relative to rivals' shipments; exceptions; penalty. 1906. Commission may determine just and reasonable charge or allowance for service rendered by owner of property transported or for any instrumentality furnished by such owner and used in such transportations. Enumeration of powers in this section not exclusive.]

§§ 16–23. [Stipulate method of award, of appeals to courts, forms of procedure, etc.]

§ 24. [Enlarging the Commission to seven members (not more than four of one political party) with term of seven years. Compensation ten thousand dollars annually.]

[By Act of June 18, 1910, a Commerce Court was created to which was given the jurisdiction possessed by circuit courts over appeals to enforce or to annul the Commission's orders, certain cases under the Elkins' Act, and mandamus proceedings. In June, 1912, Congress voted to abolish the Commerce Court.]

RAILROAD VALUES AND RATES

[No railroad rate question ever brought before the Interstate Commerce Commission, it seems probable, has exceeded in importance that involved "in the matter of proposed advances in freight rates by carriers," decided Feb. 22, 1911. The question was as to the justness and reasonableness of certain proposed (increased) rates, considered as a whole, affecting a large part of the traffic throughout a large part of the country. The inquiry was divided into two parts, the one affecting the Western roads, and the other the Eastern roads, and separate decisions were rendered; but fundamentally one issue was involved, the right of the railroads in these territories, acting in unison and exercising a certain degree of monopoly power, to put into effect the new rates proposed. The decision of the Commission, which was in both cases unanimous, was adverse to the railroads. It had been generally predicted by railroad advocates that if an adverse decision were rendered, it would greatly depress railroad securities. A slight immediate decline did occur, followed by a quick recovery, and later by an advance. The opinions of the Commission, and the evidences presented showing the growing revenues and generally prosperous conditions of the roads, served as a certificate of soundness accepted by investors.

Among the far-reaching questions discussed in the decisions was that whether rates may justly be increased to earn dividends either on undistributed earnings in the past or on the increment of land values in city terminals or on the rights of way. This question is to some extent involved in every case of rates as connected with franchise values of public-service corporations. Neither the courts nor the commissions seem as yet to have entirely solved the problem. The Interstate Commerce Commission said in the decision on the Western Roads case (Senate Document, No. 725, 61st Congress, 3d session, in 10 volumes; extracts from pp. 5382–5391):]

The Burlington's claim of "legal right." The Chicago, Burlington & Quincy Railroad Co. presents another ground of justification for advancing the rates under consideration. It is entitled "as a matter of legal right to a fair return upon

the actual value of its property used for transportation, which value, from whatever source in the past created, is measured in its case by at least the cost of presently reproducing its physical plant. To obtain such fair return, it necessarily and equally is entitled to charge in the aggregate rates of transportation which, subject to the one limitation that the particular component rates are themselves reasonable and just to the shipper, will produce such reasonable return upon the property employed."

From this postulate the Burlington proceeds to the conclusion that it does not now enjoy a fair return, and finding itself confronted with the need of additional revenues to meet wage advances and other operation and maintenance charges and to offset diminishing net earnings, it may, as a matter of legal right, advance the rates upon the commodities selected, inasmuch as the advanced rates would be reasonable in view of the value of the service to the shipper. Logically it refuses to have its position regarded as an attempt to justify these higher charges, for in its theory it does not need to justify them, and what it presents to the commission is termed as "explanation of them and of the occasion for their imposition."

Here is a proposition at once novel and searching. The Burlington road may be taken as representative in that territory. Its traffic is diversified; its capitalization comparatively conservative; its credit excellent; its tonnage large; and management capable. When asked by the Government to explain why it has increased its charges, its reply is that it has a right to do so because it is not now receiving a fair return upon the value of the property which it uses; value being estimated cost of reproduction. This leads to a few questions: (1) What did the Burlington road cost those who built it? (2) What is its present value? (3) Whence came this value? (4) Is such increase in value a basis for increase in rates?

The controller of the company has given us the answer to

the first question. He testified that the total investment in the property from the sale of stocks and bonds was $258,000,000.

To the second question the company answers that its present value is $530,000,000.

The difference between these two figures represents (1) investment in the property made out of earnings; (2) increased value of right of way and terminals owned by the company. This is the answer to the third question.

The position therefore taken by the Burlington is that it has a right vested in it by law to add to its freight charges such amounts as will yield at the present time a fair rate of interest upon more than $270,000,000 which does not represent either the proceeds from the sale of a share of stock or a dollar of borrowed money, so long as the rate to the shipper is not unreasonable.

This contention opens up the broadest field of inquiry, as to the questions of law and fact upon which the commission could enter. We have before us a property constructed by private persons under authority of Government to be devoted to a public use. These private persons invest in that property the issues of certain sales of stocks or bonds amounting to $258,000,000. They capitalize this property at $320,000,000, one-third of which capitalization is represented by stock and two-thirds by bonds; they carry upon their books the cost of road and equipment at $364,000,000; and they now insist that the law gives them the right to a return upon $530,000,000. . . .

Under its present capitalization, $320,000,000 ($110,000,000 of which was in stock), this corporation had available for distribution as dividends $13,975,620 in the year 1910, or 12.61 per cent. on its capital stock outstanding. "This," says the Burlington, "is an insufficient return, because it is based upon a capitalization which represents much less than value, and the courts have decided that under the Constitution property of this character is entitled to a reasonable return upon

the present fair value of its property employed in the service of the public."

In support of this proposition the leading case of Smythe v. Ames (167 U. S., 446) is cited:

> We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public.

Again, in Wilcox v. Consolidated Gas Co. (212 U. S., 19):

> It is no longer open to dispute that under the Constitution what the company is entitled to demand in order that it may have just compensation is a fair return upon the reasonable value of the property at the time it is being used by the public.

Relying upon these cases, the Burlington's full position is that it is immaterial how the property was acquired, what it originally cost, whether the present value may be claimed to be in part the result of earnings put back into the property in betterments, or is due to growth of traffic and development of the country served. "The sole inquiry open at this time is the actual fair value of the railroad as it exists to-day as a going concern. The company cannot be lawfully required to take less than a fair and reasonable return upon this value. To be denied such return will be to appropriate in part a value that belongs to the owners for the use and benefit of the public without just compensation therefore being first paid or secured." [Cases cited.]

Notwithstanding these decisions, it remains for the Supreme Court yet to decide that a public agency, such as a railroad created by public authority, vested with governmental authority, may continuously increase its rates in proportion to the increase in its value, either (1) because of betterments which it has made out of income, or (2) because of the growth of the property in value due to the increase in value of the land which the company owns.

If the position of the Burlington is sound and is a precise expression of what our courts will hold to be the law, then, as we are told, there is certainly the danger that we may never expect railroad rates to be lower than they are at present. On the contrary, there is the unwelcome promise made in this case that they will continuously advance. In the face of such an economic philosophy if stable and equitable rates are to be maintained, the suggestion has been made that it would be wise for the Government to protect its people by taking to itself these properties at present value rather than await the day, perhaps 30 or 50 years hence, when they will have multiplied in value ten or twenty fold.

The books of the Burlington road now show some $76,000,000 in surplus, which is the accumulation from operating revenues of many years. This surplus is not all held in the form of cash, but has in part been put into the property in one form or another of additions and betterments. The stockholders, it is said, have chosen to waive their right to distribute this to themselves in the form of dividends and have reinvested it in the property. Without questioning the right of the stockholders to exercise this option, and without denying to them the right to a return upon any investment which they make, this much seems clear: That if the investment in a railroad at a given time is $100,000,000, upon which it yields a net revenue of $25,000,000, the stockholders may take that $25,000,000 entirely to themselves. But if they choose to take but one-half of this amount as their return upon their investment and to reincorporate in the same property the remaining half of the net earnings, they may not for this reason increase rates during the succeeding year so as to give them a return upon $112,500,000. It is idle to spend time in nice processes of reasoning over such a condition of fact. Public policy—the welfare of the State—forbids the adoption of any such working theory. Because of the addition of the $12,500,000 a carrier may be entitled to an additional return upon the property, but is it entitled to

increase rates so as to make that return? If the stockholders, as in the last sense trustees for the public, exercise their right to reinvest the company's money in the improvement of the property, the company may be entitled to an earning upon the value of that property without it in any way following that the rates out of which this surplus was accumulated shall still further be increased so as to provide that additional income.

Any new money put into the property, whether derived from the sale of securities or from surplus, which might have been appropriated to dividends, represents new value—an addition to the property—and on this addition the stockholders interested are entitled to a reasonable return if that can be had for an additional service given, but it is not equitable that because the directors of a corporation see fit to distribute to the stockholders less than the amount which the company earns and may be appropriated to dividends, the shippers who made this large dividend and surplus possible shall be increasingly taxed in geometrical progression to make return upon it. New improvements should bring new revenue. The risk of the stockholders in investing their money in these improvements is the same risk that they took when they invested their original funds in the original property. (San Diego Land & Town Co. v. National City, 78 Fed. Rep. 87). . . .

The shippers . . . cannot be compelled to continuously pay higher rates because the directors of the company have not seen fit to distribute their full earnings in dividends. . . . [Otherwise] it is within the power of a board of directors to indefinitely increase the shipper's rates, for all that is needed is that the railroad in one year make an exceedingly large return and after paying a dividend issue stock to the stockholders equivalent to the balance of the unappropriated operating revenue available for dividends, and this money, being invested in the property, creates more value which the shipper must care for. [Other examples here discussed.] . . .

The Supreme Court in the Tift case (*supra*) held that a

railroad could not increase lumber rates because it was buying new equipment out of current earnings, although by so doing it was adding to the value of its property, and doubtless increasing the facility of movement of the lumber traffic. This principle makes against the contention of the Burlington directly, and we see no reason why it may not be accepted as settled law.

The record does not show nor does the Burlington contend that its stockholders have not in the past been remunerated adequately upon the basis of their then-owned property. Its position is that the property having grown in value with the growth of the West and the increase in traffic, it may advance rates up to the point that the shipper can afford to pay and under which the traffic will move.

We are not here dealing with the value of this property, nor with the definition of value, whether value means investment, cost of reproduction, or something else. Our position is that a railroad may not increase rates upon shippers for the reason and as an outgrowth of the fact that it has accumulated out of rates a balance of profit which has been invested in the property. This investment must take care of itself. It must bring a return for itself either in increased traffic or in the reduction of expenses of operation. There is no justification for the investment of this surplus if it is to have the effect of increasing the rates upon the shippers over the original line. If the theory is to be recognized that by increasing the value of their property, by putting back operating revenue into the property, a carrier may as a legal right increase rates, then the shipper is worse off each time he pays a rate which allows a revenue over and above a reasonable return upon the original investment.

Herein we have outlined the full position of the railroad and the opposing position. We do not regard the decision of this question as vital to this proceeding, however, accepting as we do for the purposes of this discussion the tenability of the Burlington's theory.

We now turn for a moment to consider the added value of railroad property by reason of the increase in the value of the lands held as terminals in cities and rights of way. Out of the difference between the original investment of $258,000,000 and the estimated present value of $530,000,000 it has been estimated that the increase in land values amounts to approximately $150,000,000. We may agree with the contention of the Burlington that it is no concern of ours as to whether these lands were obtained by private or public donation in whole or in part, but a larger question of public concern is involved—the legal right of a carrier to continuously increase rates because of the growth of the community which gives this added value to the land over which the railroad runs. The States of Illinois, Iowa, South Dakota, Kansas, and Nebraska have not reached their maximum development. Their total population under the census of 1910 was but 32.66 per square mile, whereas the population of the States immediately to the east—Indiana, Ohio, New York and Pennsylvania—was 143.23 per square mile. We have seen the population of the city of Chicago alone grow in 20 years from 1,105,540 to 2,185,283. To-day a road is built upon a prairie farm; next year it runs through a Kansas village; 20 years hence this same village may be a city of half a million.

It is unquestionable that Kansas would not enjoy the population that she has or the prosperity that is hers without the presence of the railroads, and those men of prophetic vision who projected those roads and invested their capital therein are not to be denied a share in the wealth which they have so largely helped to create. But as these lands increase in value with the growth of the communities which they serve should not this larger share coming to the railroad arise out of the operation of that property and the increase in its traffic rather than by the imposition of a new burden of tolls upon those who use their road? This question is not of paramount importance in this case, but, it is urged, may become one of supreme moment if the carriers insist upon a right to increase

rates in proportion to increasing land values. In a very real sense these added land values do not come to the railroad as a railroad, but as an investor in land which has been dedicated to a public use; and, being so dedicated, it may be strongly urged that the increment added thereto from year to year by communal growth should not necessitate an imposition of additional rate burdens upon the public. Again, it is said that the community increasingly taxes these lands upon their commercial value as real estate, and that therefore the public is stopped from denying their right to return upon such basis of value. Without delaying to consider this matter it may be said that in this case it has been discovered that the ratio of taxes to operating revenues of the carriers remains approximately the same throughout the years. While the absolute tax somewhat increases the relative tax does not increase. Furthermore, such facts as we have been enabled to gather tend to indicate that land used for railroad purposes does not increase in value out of proportion to the increase in the value of the property as a whole.

Whatever the true economic or legal view may be as to the right of a carrier to consider the increase in value of its land as a part of the value upon which it is entitled to a reasonable return, such increase in value does not of itself establish the right of a carrier to increase rates upon a given service. Certainly if the Supreme Court may decline to lay down the absolute rule that "in every case failure to produce some profit to those who have invested their money in the building of a road is conclusive that the tariff is unjust and unreasonable" (Reagan v. Farmer's Loan & Trust Co., 154 U. S. 412), it is a conservative statement of the law to hold that a railroad may not increase the rates upon a number of commodities solely because its real estate has risen in value.

The Burlington has assumed that the true basis of a railroad value was the cost of reproduction, and it may not be unworthy of our attention to consider the reproduction value of this property as estimated by the officials of the Burling-

ton and present the record made therein as to the cost of building a road in this section of our country. It is said, and with no little supporting reason, that those who prophesy or fear that rates will constantly ascend from this time forward because of the increasing value of lands are mistaken; that no such results would take place because increasing earnings would care for increasing land values. This certainly should be so if the property is situated so that it can avail itself of the greater volume of traffic produced by a richer and more productive territory. At any rate it is fair to say that the time has not yet come when values have so increased that they menace existing rates, whatever may be the support they give to the contention that rates should not be reduced. [Page 5389.] . . .

[Page 5391] The trend of the highest judicial opinion would indicate that we should accept neither the cost of reproduction, upon which the Burlington's estimate of value is made, nor the capitalization which the Santa Fe accepts as approximate value, nor the price of stocks and bonds in the market, nor yet the original investment alone, as the test of present value for purposes of rate regulation. Perhaps the nearest approximation to the fair standard is that of *bona fide* investment—the sacrifice made by the owners of the property—considering as part of the investment any shortage of return that there may be in the early years of the enterprise. Upon this, taking the life history of the road through a number of years, its promoters are entitled to a reasonable return. This, however, manifestly is limited; for a return should not be given upon wastefulness, mismanagement, or poor judgment, and always there is present the restriction that no more than a reasonable rate shall be charged.

[An interesting item in this connection is clipped from the financial columns of the New York *Times* of July 10, 1912.—Ed.

Burlington's Fat Treasury.—No one appreciates more than J. J. Hill that one cannot eat his cake and have it. For several years stockholders of the Great Northern and Northern Pacific have been

greedily watching the increasing profit and loss surplus of the Chicago, Burlington & Quincy, jointly owned by the two roads. When the Burlington was earning 11 per cent. they felt that the time had come for it to pay something more than the interest on the cost of its ownership. When it began to show from 13 to 14 per cent. they saw the possibility of a "melon" in its surplus over the 8 per cent. disbursed on its stock. In 1911 the road earned 15 per cent. and still paid only 8 per cent. In the period closed with June 30, after a very severe winter and other unfavorable conditions which left some of the transcontinentals with a deficit after dividends, the Burlington earned about 13½ per cent. on its $110,000,000 of stock. The reason this company is able to continue to earn a large balance over dividends in spite of bad weather or business depression is that the management did not embrace the first opportunity to increase the payment on its shares. Instead, the surplus was plowed back into the property, as railroad men say. It was used for improvements, which are now earning a handsome return on the uncapitalized investment. In the Burlington the Northern Pacific and Great Northern have a sheet anchor which would enable them to weather a bad year without reducing their dividends. So far the Hill boards have shown no disposition to cut into the Burlington's surplus.

RAILROADS AS NATIONAL ASSETS

[The Interstate Commerce Commission in its decision on "Advance of rates by carriers, in official classification territory" (Eastern roads), Feb. 22, 1911, weighed somewhat the question as to the ultimate equities in the growing railroad surpluses and increments of value in the United States. After considering the case presented by such improvements as the elevation of tracks, involving large expenditures for the benefit of the public, the Commission says: "It is difficult to see how it [the railroad] can, upon the theory of the Yellow Pine case, charge the entire expense of the improvement to the public through higher rates." It then continues (Senate Document, 725, 61st Congress, 3d session, p. 5459):]

Where lies the difference between a revenue-producing and a non-revenue-producing improvement? So long as the improvement is for the future the present must not be entirely taxed to provide it. The elevation of those tracks has added to the cost of the railroad; the value of the property which that company is using for the public benefit has been enhanced, and this justifies it in demanding from the public a greater return than formerly, but not in demanding the price of the improvement itself.

While this would seem to be the law of the situation, there is a suggestion of public policy which might under some conditions lead to a different conclusion. It is a wise thing for a nation as well as for an individual to lay up something for the future. This Nation in time to come must engage in active commercial competition with the rest of the world. We must manufacture and sell against other nations. Railway rates will enter as an important factor into that competition. Not only the rate upon the raw material to the factory and upon everything which enters into the cost of living will be of consequence, but also the rate from the factory to the port.

Germany and France to-day use their railroads to assist the home manufacture as against his foreign competitor by allowing a special rate upon articles for export.

In the past we have enjoyed cheap raw materials. Our food has been cheap; our coal and our ores have been near the surface; our lumber has been plentiful. These resources are being exhausted; the cost of food is increasing; our forests are being depleted. We must go deeper for our coal. All this will render the cost of production more expensive, and it might be wise to lay up in our railroads a fund which should be of assistance to future generations in offsetting this tendency to increase the price, were there any assurance that the fund when provided could be made available. There is the gravest doubt upon this point, for the reason that whatever is invested in these properties from earnings may belong, not to the public which has paid for it, but to the stockholders who have already received a full return upon their investment in the way of a dividend.

The president of the Pennsylvania Co. testified that since 1887 his company had put into the Pennsylvania lines east of Pittsburgh $262,000,000 from earnings. During all that time this company has also paid to its stockholders munificent dividends. Now to whom belongs this $262,000,000, a sum which, according to the statistical report of the Pennsylvania Railroad Co. to this commission for the year ending June 30, 1910, equals nearly two-thirds of the total cost of construction of the 2,123 miles owned by that company?

Suppose this commission were required to fix a value upon the Pennsylvania lines east of Pittsburg. Could any distinction be made between this sum which has accrued from the operation of the property and what has been paid in other sources?

We are not required at this time to express an opinion upon that point. What the claim of the railroads will be when the matter finally comes to an issue is well shown by a question which was asked upon the argument and answered by that

attorney who was urging most strongly the right of the railroad to accumulate a surplus for this purpose:

Question. The popular idea seems to be that these properties ought to be physically valued, and that the rate should be determined by the value of the property so fixed. In that case, would the surplus be entitled to be appraised as a part of the value?

Answer. As of the date that such a valuation takes place, the property as it stands belongs to the stockholders. That has been in accordance with the policy of the Government, and it would take a change in the policy of the Government to change that legal situation. So I think the valuation would necessarily be on the property as it stands.

In 9 I. C. C. Rep. 382, 417, the commission, in considering the financial condition of the Lake Shore & Michigan Southern Railway said:

The Lake Shore & Michigan Southern, on June 30, 1901, owned a majority of the capital stock of its competitor, the New York, Chicago & St. Louis Railroad Co., a majority of the capital stock of its connection, the Pittsburg & Lake Erie Railroad Co., almost one-half of the capital stock of the Lake Erie & Western Railroad Co., and $11,224,000 of the capital stock of the Cleveland, Cincinnati, Chicago & St. Louis Railway Co., besides smaller holdings in other companies. These stocks had been acquired, in addition to the payment of dividends not less than 6 per cent. for many years, out of net earnings. During the year 1902 it purchased, apparently out of surplus, $4,728,200 of the capital stock of the Indiana, Illinois and Iowa Railroad Co., the entire capital being $5,000,000.

This company after paying 7 per cent. dividend to its stockholders has a surplus each year sufficient to buy the control of a very considerable railroad. Before holding that its revenues ought to be further increased, or that the Government ought not to exercise any supervision over those revenues, it may be well to consider what the bearing of this process, continued for half a century, is to be upon two of the great economical problems before us, namely, the distribution of wealth and the control of the avenues of transportation.

The carriers in the proceeding now before us have claimed that they should be allowed to invest in improvements and additions to the property an amount equal to that paid by way

of dividends to stockholders. In the year 1910 railroad dividends aggregated $405,131,650. If this sum were to be invested in our railways annually for the next half century, it would amount at the expiration of that period to $20,256,582-500, not regarding the item of interest. This sum is far in excess of the present total capitalization of our railroads. It is not improbable that it may equal the total amount which will be expended in railway development in the next half century, and upon this vast amount which has been accumulated in addition to a fair return upon the investment railway stockholders will claim a return. Every dollar which has thus been added to the value of these properties justifies, according to the claim of these defendants, an added net return, and it is further claimed that the Constitution of the United States protects these defendants in the right to impose such charges as will yield this return.

It is evident that until the status of this surplus is determined by legislative action or judicial interpretation, this commission can not properly permit an advance in rates with the intent to produce an accumulation of surplus for this purpose.

THE SHERMAN ANTI-TRUST LAW

[Act of July 2, 1890 (26 Stat. 209)].

AN ACT TO PROTECT TRADE AND COMMERCE AGAINST UNLAWFUL RESTRAINTS AND MONOPOLIES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.

SECTION 1. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared illegal. Every person who shall make any such contract or engage in any such combination or conspiracy, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

§ 2. Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

§ 3. Every contract, combination in form of trust or otherwise, or conspiracy, in restraint of trade or commerce in any Territory of the United States or of the District of Columbia, or in restraint of trade or commerce between any such Territory and another, or between any such Territory or Territories and any State or States or the District of Columbia,

or with foreign nations, or between the District of Columbia, and any State or States or foreign nations, is hereby declared illegal. Every person who shall make any such contract or engage in any such combination or conspiracy, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

§ 4. The several circuit courts of the United States are hereby invested with jurisdiction to prevent and restrain violations of this act; and it shall be the duty of the several district attorneys of the United States, in their respective districts, under the direction of the Attorney General, to institute proceedings in equity to prevent and restrain such violations. Such proceedings may be by way of petition setting forth the case and praying that such violation shall be enjoined or otherwise prohibited. When the parties complained of shall have been duly notified of such petition the court shall proceed, as soon as may be, to the hearing and determination of the case; and pending such petition and before final decree, the court may at any time make such temporary restraining order or prohibition as shall be deemed just in the premises.

§ 5. Whenever it shall appear to the court before which any proceeding under section four of this act may be pending, that the ends of justice require that other parties should be brought before the court, the court may cause them to be summoned, whether they reside in the district in which the court is held or not; and subpœnas to that end may be served in any district by the marshal thereof.

§ 6. Any property owned under any contract or by any combination, or pursuant to any conspiracy (and being the subject thereof) mentioned in section one of this act, and being in the course of transportation from one State to another, or to a foreign country, shall be forfeited to the United States, and may be seized and condemned by like proceedings as those provided by law for the forfeiture, seizure, and con-

demnation of property imported into the United States contrary to law.

§ 7. Any person who shall be injured in business or property by any other person or corporation by reason of anything forbidden or declared to be unlawful by this act, may sue therefor in any circuit court of the United States in the district in which the defendant resides or is found, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the costs of suit, including a reasonable attorney's fee.

§ 8. That the word "person," or "persons," wherever used in this act shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, or the laws of any of the Territories, the laws of any State, or the laws of any foreign country.

[The following are expressly or in effect amendments of "the Sherman Anti-trust Law" by addition, though the terms of the original act never have been changed.—ED.]

1894, Aug. 27. In the tariff act (Wilson Act), sections 73–77 (which were expressly preserved in the Dingley Act of 1897 when most of the Wilson Act was repealed) directed prohibitions and penalties very similar to those of the Sherman Act against cases in restraint of trade in connection with the importation of goods.

1903, Feb. 11. "An act to expedite the hearing and determination of suits" under the Anti-trust act, and the Interstate Commerce Act, by giving precedence to such cases.

1903, Feb. 25. An appropriation of $500,000 made to be expended under the direction of the Attorney-General in the employment of special counsel to prosecute suits under the acts of 1890 and 1894 above mentioned; proviso that immunity is granted to persons for any matter concerning which he shall testify in such suits.

1903, Feb. 14. In an act to establish the Department of Commerce and Labor was provided a Bureau of Corporations to gather, compile, publish and supply useful information concerning corporations engaged in interstate commerce, and with powers of investigation similar to those of the Interstate Commerce Commission.

1906, June 30. An act defining the immunity of witnesses under the several acts before mentioned; immunity shall extend only to a natural person testifying under oath.

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